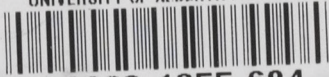


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Annual Report

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CANADIAN FARM REHABILITATION AND RELATED ACTIVITIES

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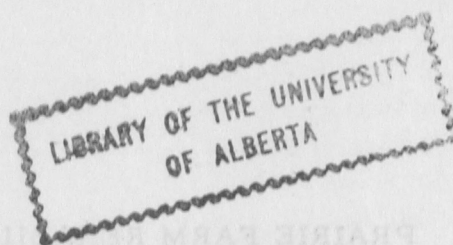
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INTRODUCTION

During the 1935 session of Parliament the Prairie Farm Rehabilitation Act was passed to provide for the rehabilitation of the drought and soil drifting areas in the Provinces of Manitoba, Saskatchewan and Alberta. The object of this Act was to deal with an immediate problem of prolonged drought which was then having a severe effect on agriculture in Western Canada. In addition to the promotion of new and improved cultural practices, provision was made for development of the surface water resources, for stockwatering and domestic use and also for the production of feed and seed supplies through irrigation. In 1937 the Prairie Farm Rehabilitation Act was amended to include land utilization and land settlement as additional objectives. By further amendment in 1939 this Act was extended to remain in force indefinitely.

The area under the supervision of the P. F. R. A. covers approximately 105 million acres. Within this area lies some 47 million acres of improved farm land which is more than half the total improved acreage in Canada. In point of volume of production, the P. F. R. A. area constitutes the most important single agricultural area in Canada and is one of the major wheat producing regions in the world. The P. F. R. A. program is designed to bring about desirable adjustments in agricultural practices which will assist in establishing a sound and progressive agricultural economy in Western Canada.

The conservation of water both on individual farms and in rural communities and the promotion of better land utilization will help minimize the effect of drought should a period of dry years return to the prairies. This program has already been effective in developing increased stability and security through the diversification of agricultural production.

The administration has also been made responsible for several large irrigation and reclamation projects outside the boundaries of P. F. R. A. These projects too have had a beneficial effect on the national agricultural economy by bringing into production, lands which formerly were of limited agricultural value.

Although this report will deal principally with the work done by P. F. R. A. in 1956, it will also review in a general way, the progress of the various programs and projects promoted by P. F. R. A. since its inception in 1935.

ORGANIZATION AND ADMINISTRATION

The P.F.R.A. has its headquarters at Regina, Saskatchewan. It is administered by a Director who is responsible to the Deputy Minister of Agriculture in Ottawa. The organization in Regina consists of the Director's Office, the Community Pasture Branch, the Water Development Branch and the Engineering Services Branch; the branch heads being responsible to the Director.

The Director's Office co-ordinates the activities of the different branches of work with the regional, district and special project offices. It also administers resettlement and rehabilitation activities, the Construction Equipment and Supply Division, the Land Division, the Planning and Information Division and the Administration Division. The Community Pasture Branch is an important part of land utilization. It undertakes construction of new pastures and supervises the operation of the community pasture network throughout Saskatchewan and Manitoba. The Water Development Branch covers the extensive program of small and community water storage projects, and the development of small irrigation projects. The Engineering Services Branch is responsible for Surveys, Soil Mechanics, Drainage, Design, Hydrology, Hydraulic Studies, Air Photo Analysis and Engineering Geology, and Stream Bank Erosion Control. These services are co-ordinated to establish the feasibility of the many types of projects that the staff is required to investigate. The construction of major irrigation and reclamation projects is administered through project headquarters.

In addition to the Head Office in Regina there are Regional Offices in Winnipeg, Man., and Kamloops, B.C., plus eighteen District Offices and nine Project Offices throughout the four Western Provinces. From the Project Offices there is usually a further breakdown to Field Offices, the number depending upon the size and complexity of the particular project.

Since P.F.R.A. activities are closely allied to those of certain Provincial Government Departments, every endeavour is made to co-operate with these agencies. Similarly, the Branch maintains a close liaison with other branches and departments of the Government of Canada, such as the Experimental Farms Service, Science Service, Economics Division and Hydrometric Service.

Fundamentally, P.F.R.A. is organized to carry out a program of work aimed at a greater security and stability for prairie agriculture.

COMMUNITY PASTURE PROGRAM

The amendment in 1937 to the **Prairie Farm Rehabilitation Act** broadened its scope to include land utilization and land settlement. This opened the way for a program which has had a far reaching effect on the type and stability of agricultural production in many areas throughout Western Canada. By agreement with the **Provinces of Saskatchewan and Manitoba**, lands on which cereal crops could not be produced economically, are transferred to the **Federal Government** for development by **P. F. R. A.** into community pastures. The province concerned selects the area to be developed and obtains control of the land. The land is then leased to the **Government of Canada** which in turn agrees to construct, maintain and improve community pasture facilities in the area selected.

As these submarginal and marginal lands are converted into productive pastures, livestock production on the surrounding farms is being increased, thus making possible a greater diversity of farm income. Families located within the boundaries of proposed pastures, are given assistance in moving to better land in the same, or nearby municipalities where they will be in a position to take advantage of the pasture facilities. Where this has not been possible, farmers have been moved to irrigation projects built by **P. F. R. A.** for resettlement purposes.

Since the Community Pasture program began in 1937, a total of 1,759,570 acres of land have been developed into 61 separate pastures. Details regarding acreage, construction and operating costs, and numbers of livestock pastured on individual pastures, will be found in Appendices I and II of this report.

PASTURE OPERATIONS

The grazing season extended from the last week of April to the end of October. Excellent grass growth was reported in all pastures with a good carryover going into the winter. Water supplies were generally good during the grazing season although some dams and dug-outs were low in the late fall.

During the year, community pastures provided grazing for 117,441 head of livestock belonging to 5,874 patrons. The pasture acreage was increased by 30,870 acres. There was also an increase of 8,942 head in the number of livestock pastured.

Pasture Services

Pasturage is allocated by the **Pasture Advisory Committee** for

each pasture on the basis of need. The Committee also sets the maximum number of stock per patron. This may vary according to local conditions.

Pasture Fees

No changes in grazing and service fees for pasture privileges were made in 1956.

Haying

A total of 4,900 tons of hay were cut and stacked in community pastures, by farmers, on a share basis. This hay is made up of crested wheat grass, mixed grasses and wild hay. No grass seed was harvested in any of the community pastures during this period.



Aerial photograph of haying operations in the Dundurn Community Pasture. Ref. #11590

Regrassing

Through a program of pasture maintenance, 3,873 acres were regrassed in 18 community pastures during the 1956 season. This was made up of 210 acres of mixed grasses for hay, 1090 acres of crested wheat grass and 2,573 acres of a brome and crested wheat grass mixture.

Breeding Service

As a requested service by pasture patrons, P.F.R.A. makes

COMMUNITY PASTURES

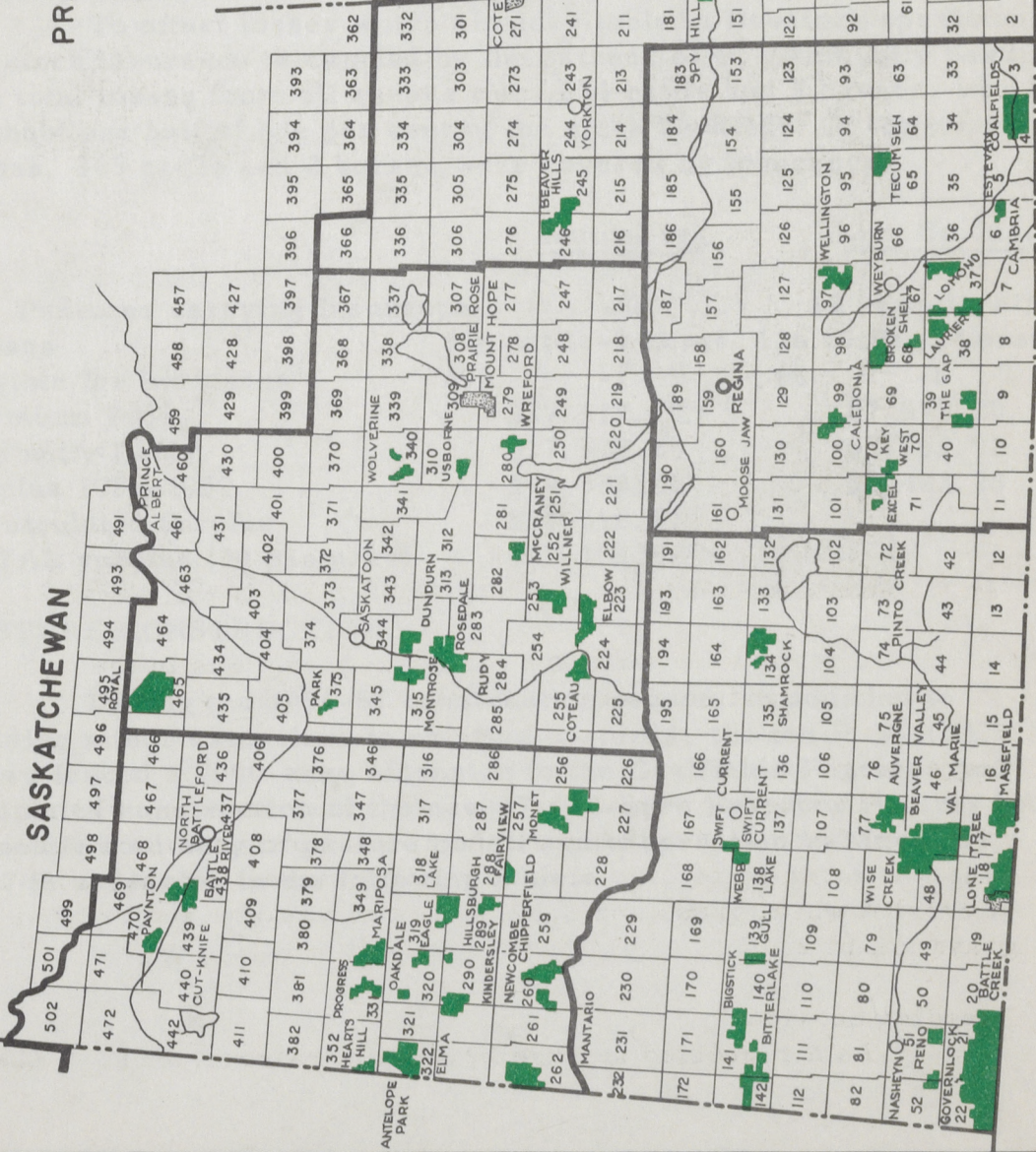
PRAIRIE FARM REHABILITATION ACT

AREA ENCLOSED IN 61 PASTURE UNITS
 SASKATCHEWAN ——— 1,600,190
 MANITOBA ——— 159,380
 TOTAL ——— 1,759,570

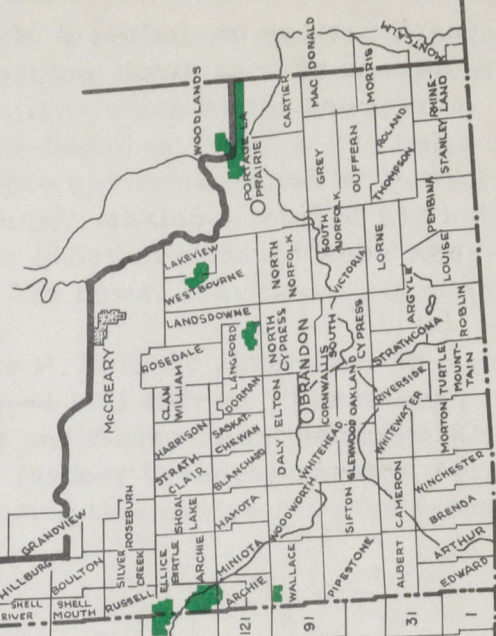
MARCH 31, 1957

PROPOSED
 COMPLETED
 PASTURE SUPERVISORS' AREA

SASKATCHEWAN



MANITOBA



available for use in community pastures, a sufficient number of pure-bred beef bulls to provide adequate breeding services. The breed of bulls used is based on the recommendations made by the respective pasture committees. Since this service began in 1938, 2,229 bulls have been purchased. In 1956 there were 663 bulls owned by P. F. R. A. and 169 bulls rented from pasture patrons, making a total of 832 bulls. Of these, 754 were Herefords, 63 were Shorthorn and 15 were Aberdeen Angus. These bulls serviced 25,974 cows, leaving an estimated 91% calf crop.

During the 1956-57 fiscal year P. F. R. A. purchased 62 pure-bred long yearling bulls and 174 purebred bull calves. These are being developed at the Archie, Outlook and Bitter Lake pastures. One hundred and twenty-five bulls unfit for further breeding service were sold for slaughter during 1956-57. During this period ten died from various causes.

Livestock Insurance

To offset losses which are inevitable in livestock operations, livestock insurance is carried by the patrons of 42 community pastures. The total losses from all causes were 634 cattle and 5 horses, which is about one half of one per cent of the stock handled. Of the total losses, 365 cattle and 2 horses were covered by insurance.

	<u>Mutual Ins.</u>	<u>Line Co. Ins.</u>
No. Pastures carrying Insurance	30	12 (4 optional)
Losses	378 cattle -1 horse	136 cattle -2 horses
Eligible for Insurance	296 " -1 "	69 " -1 "
Premium Paid	\$27,117.75	\$7,877.20
Indemnity Paid	\$17,529.29	\$5,393.92
Surplus 1956-1957	\$ 9,588.46	\$2,483.28
Accumulated Surplus	\$37,516.12	
TOTAL surplus (30 pastures)	\$47,104.58	

PASTURE CONSTRUCTION

During the 1956-57 construction season, in addition to building minor extensions to existing pastures, the ten P. F. R. A. crews fenced a 7000-acre extension to the Coalfields Pasture, and completed construction of the new 17,000-acre Fairview Pasture. A complete summary of pasture construction operation to March 31, 1957 is presented in the following table:-

Summary of Pasture Construction Activities
to March 31, 1957

Particulars	Projects Completed in 1956	Repair Work Completed in 1956	TOTAL to March 31 1957
Fencing	130 miles	67 miles	4,530 miles
Corrals	1	8	154
Texas Gates	10	8	223
Buildings:			
Pasture Mgr. Dwellings	3	6	54
Rider's Cabins			26
Barns	3		96
Garages	3		52
Other (Granaries, bullsheds, livestock shelters, etc.)	16	7	247
Water Development:			
Wind Mills	19	6	328
Pumps		10	349
Wells	16	27	315
Springs	12	5	145
Dams	25	14	351
Dugouts	17	7	401

PASTURE IMPROVEMENT

Land enclosed in community pastures are subject to continuing improvement for pasture purposes. Grass is re-established, convenient watering facilities are provided, and grazing and pasture management policies are adopted, which will assure continuing productivity and maximum utilization of the resources available. Through this program, the carrying capacity of the pastures has been almost trebled.

An advanced program of work involving the application of engineering principles in community pasture improvement has been instituted. This program has now extended to 41 pastures throughout Manitoba and Saskatchewan. In the Parkland areas improvement work is in the form of land clearing and drainage. Large areas being reclaimed by drainage are developed into controlled flood irrigation projects by the installation of control structures. Two thousand acres have been reclaimed in the Beaver Hills Pasture in the last two years.



Pasture Manager's headquarters in Wolverine
Community Pasture, Sask. Ref. #12840

Land clearing methods vary in accordance with the size and density of the natural tree growth. The following methods are being used:

1. Rotary brushcutters for growth up to 3 1/2" in stem diameter.
2. Winter clearing of heavy growth with bulldozers.
3. Summer clearing of heavy growth with cutters and pilers.
4. Winter clearing of heavy growth with chain and cable.
5. Burning standing growth.
6. Burning knocked down growth.
7. Herbicidal spray by aircraft.

Rotary brushcutters have proved to be the most economical method for clearing brush up to 3 1/2" in diameter. A total of 2400 acres have been cleared by this method at an average cost of \$6.50 per acre.

Winter clearing by bulldozers of heavy growth when the snow is less than 30", is more economical than summer clearing by cutters and pilers. Dozer clearing is limited, however, owing to the fact that cattle cannot graze the area until burning has been completed. This can be accomplished in one or two years as a good growth of natural grass usually develops following the removal of tree shade. Summer

clearing by cutters and pilers has been done for the purpose of fire guarding large areas. This method has also been used where it is warranted by the demand for immediate pasturage.

The cable method of clearing was started in March 1957. By this means the growth was knocked down completely and windrowed in the same operation, allowing the area to be grazed the same year.

This method was found to be economical and highly satisfactory. Owing to the weather conditions, burning of standing growth after fire guarding, has not been significantly successful. Under drier conditions extensive burning might be anticipated.

Herbicidal spraying has been very satisfactory, killing all willow and about 80% of the poplar growth, at an average cost of \$3.00 per acre. All cleared areas must be sprayed to prevent new growth. Grassing of cleared areas has not been extensive because of the resulting heavy growth of natural grasses with the removal of shrub and tree growth. Special equipment is required for seeding grass in these areas.



Aerial spraying in Beaver Hills Community Pasture to prevent re-growth along newly cleared fireguard.

Ref. #13773

In the open plains area of Saskatchewan and Manitoba, the pasture improvement program consists of soil and water conservation

practices. Fourteen new dugouts and 21 new dams were constructed in 1956. Repairs were made to 10 existing stockwatering facilities. Contour furrowing, a practice designed to retain practically all the precipitation which falls on an area, was carried out on a total of 1265 acres in the Val Marie pasture. Water spreading systems covering 80 acres have been constructed at Val Marie and Lone Tree. Water spreading and contour furrowing secure a two-fold purpose. They increase grass production and provide protection for dams and irrigation works by slowing and reducing the run-off in the lower reaches of the drainage area.

Flood irrigation schemes on 1700 acres in three pastures are nearing completion. Topographic surveys have been completed on 5500 acres of range land for the planning of future improvement work. In all, some 12,000 acres have been affected by the improvement program of the last two years.



Dry Lake flood irrigation scheme in Beaver Valley Community Pasture, southwestern Sask.; one of several projects built in recent years under the P.F.R.A. program of pasture improvement. Ref. #12218

DUNDURN CATTLE MOVEMENT

In July 1956, because the Dundurn Pasture, located 30 miles south of Saskatoon, was requisitioned by the Department of National Defence for military training purposes, it became necessary to move 733 cattle. The original plan was to move these cattle to the Royal pasture about 60 miles west of Prince Albert. As a result of heavy rains in that area, it became necessary to send about half of the cattle to the Wellington pasture some 60 miles southeast of Regina.

Between June 25 and July 11, a fleet of four P.F.R.A. trucks transported 387 cattle to the Royal pasture and 278 cattle to the Wellington pasture. They returned these cattle to the Dundurn pasture at the end of October. Sixty-eight cattle were taken home directly from the Dundurn pasture at the end of June.

The return distance to Royal pasture is 250 miles, while the return distance to the Wellington pasture is 404 miles. It has been estimated that each truck travelled approximately 4500 miles in this cattle movement. No fatalities or injuries were incurred during the transportation of these cattle.

It was not an economical operation but one of necessity. As an emergency measure it did, however, prove the feasibility of such a movement of cattle should conditions arise in the future which would warrant a similar undertaking.

This two-way trucking service was provided at no extra cost to the patrons concerned.

REHABILITATION AND RESETTLEMENT

Under the terms of the Prairie Farm Rehabilitation Act, provision is made for the rehabilitation and resettlement of farmers from areas of the prairies where drought conditions have rendered farming a hazardous and frequently uneconomic pursuit.

Where it has been possible to achieve satisfactory rehabilitation without the necessity of moving farmers from their present locations, this has been done. In other instances it has been necessary to move settlers to other areas where they can be assured of an adequate living from farming.

In this connection, irrigation has played a major role both in stabilizing production on farms in the drought area, and in providing improved land on which farmers can become permanently rehabilitated

The following is an account of those irrigation projects in Saskatchewan which were built especially for rehabilitation and resettlement purposes, and which the P.F.R.A. on behalf of Canada, is continuing to operate.

VAL MARIE IRRIGATION PROJECT

Irrigation is carried out on this project by individual farmers in the surrounding district in conjunction with their normal dryland farming operations. The project provides these farmers with a plot of irrigated land on which can be produced an assured winter supply for livestock, and reserves of feed to carry livestock over dry periods. By so doing, the project has allowed farmers in the district to give more emphasis to livestock production, place less reliance on grain farming as the sole source of income, and generally follow a more balanced pattern of land use in their farming operations.

Ninety-four farmers cropped land on the project during 1956, irrigating 5052 acres of land. Forage crops continued to be the main form of production. Yields of forage increased slightly in 1956 over the previous year. This was partly due to an increase in acreages devoted to this crop during 1956, and more favorable weather conditions which permitted farmers to take a second cutting of hay. There has also been a trend to re-vitalize old stands of grass by breaking and re-seeding, which has tended to further increase yields.

Work carried out on the project during 1956 included completing of construction on 4 1/2 miles of main drain under improvement in the south portion of the project and repair and replacement of existing irrigation and drainage structures where this work was indicated. In addition, six single-span pile bridges were constructed over the main canal and laterals in the south section of the project to replace mud sill bridges no longer safe for farm traffic.

East of the town of Val Marie, three hundred feet of main canal bank along the river, which has shown indications of instability, were investigated during the past summer by the Soil Mechanics Division of P. F. R. A. Based on their recommendations, it is planned that the main canal at one point will be partially relocated and lined with compacted clay. At another location the toe of the canal bank next to the river will be protected and stabilized with brush and gravel, and by driving piling at ten-foot centers along the bank next to the stream.

Finally, portions of the greasebrush area in the center block intended for use as irrigated pasture, were seeded for the second year to a grass mixture. Poor surface drainage in this area and the difficulty of establishing stands on heavy gumbo soils, which tend to crust heavily, have been the main problems hindering development of this area.

WEST VAL MARIE IRRIGATION PROJECT

The West Val Marie Irrigation Project serves a similar purpose to the Val Marie Irrigation Project. Thirty-five hundred acres in size, the project has helped materially to diversify and stabilize agriculture in the surrounding region by providing assured feed supplies and supplementary pasturage for livestock. A portion of the area, involving approximately 800 acres of land, which can be partially irrigated, is fenced and cross fenced for use by the Val Marie Community Pasture. The remainder is subdivided into fields which are rented out to farmers for hay under lease or hay permit. A further subdivision is made of land fronting on the Frenchman River, as building sites for farmers who wish to move on to the project.

Forty-nine farmers cropped land on the project during 1956, including 18 on Lease Agreements, and 31 on Hay Permits. The total acreage now in forage amounts to 2210 acres in this area. Production of forage on 1803 acres from which hay was cut, amounted to 4186 tons or 2.3 tons per acre. This represents an increase in acreage in forage over 1955, of 408 acres and an average increase in production for the area of approximately 1/2 ton per acre. Some of this increase in production, however, is offset by the fact that farmers in 1955 were unable to take a second cutting of forage due to unfavorable weather conditions and grazed the hay lands instead.

Patronage on the project increased by 9 farmers during 1956. No land has yet been let out on Sale Agreement. However, legal survey parties are continuing their work of establishing irrigation subdivisions on the project in preparation for this eventuality. Twenty or more farmers have already indicated their desire to enter into such an agreement.

Eight of the 15 river subdivisions have now been occupied by full-time resident farmers. One new settler will move onto a lot during 1957. The remaining lots are let out each season on yearly leases and hay permits.

PASTURE LAND

PASTURE LAND

PROPOSED RESERVOIR
50 MILE LAKE

WEST VAL MARIE
RESERVOIR and DAM

MAIN CANALS and
IRRIGATED AREA

VAL MARIE DAM
and RESERVOIR

MAIN CANALS and
IRRIGATED AREA

PASTURE LAND

The FRENCHMAN
RIVER

MAIN CANALS and
IRRIGATED AREA

IRRIGATION - GRAZING LAND RELATIONSHIP

VAL MARIE PROJECT
FRENCHMAN RIVER

CANADA
Department of Agriculture
·P.F.R.A.

MARCH 31, 1957

IRRIGATED LAND ☒ GRAZING LAND ☐



In the area reserved for use by the Val Marie Community Pasture, one field 450 acres in size, carried 350 head of yearling cattle for three months. Another 350-acre field carried 125 head of cattle for two months. Five hundred head of cattle were permitted to graze the entire Project area during December and January. Most of the 500 cattle grazed in the area during December and January will continue to be fed on the project until spring. Sixty acres of land were reserved by the Community Pasture for the production of hay as winter feed for their breeding bulls. One hundred and twenty tons were harvested from this area during 1956.

Land development and the building of suitable irrigation structures continued to be the main feature of work on the project during 1956. A further 396 acres of land were seeded to forage in the fall of 1956 after all other land preparation and irrigation development work was completed, in readiness for leasing to farmers in 1957. A good catch of grass was obtained on all but 160 acres which may have to be re-seeded in 1957.

A welcome addition to the project in 1956 was a 14 mile telephone line linking both irrigation and pasture headquarters to the town of Val Marie. This line, which was constructed with project labor, was completed early in the spring of 1956. During the short time it has been in operation it has contributed much to the efficient operation of both irrigation and pasture divisions.

EASTEND IRRIGATION PROJECT

The Eastend Irrigation Project contains 2750 acres of irrigable land operated by 40 plot holders under the following disposition:

Acreage in forage	-	1840 acres
Acreage in cereal crops	-	510 acres
Acreage not assessed, due to seepage	-	240 acres
Rough irrigable land used for grazing	-	160 acres

During 1956, 1970 acres of this area were irrigated - 1550 acres with one application of water, and 420 acres with two applications. As in the case of the Val Marie and West Val Marie Irrigation Projects, the main form of production is forage crops. Farmers have recognized, as on the other projects, that hay and livestock must be regarded as synonymous with one another and that together they provide for a more stable and secure agriculture in those regions. The acreage in forage has shown continued increases over the years on this project.



A typical area of irrigated land on the East-end Irrigation Project as seen from the air.

Ref. #11648

Correspondingly, numbers of livestock on farms operated by patrons of the project, have also shown a continuing increase. There are now 800 more acres in forage on the project than there was in 1953. There are also 1400 more head of cattle on farms of project patrons than in 1953. This trend is indicative of a move on the part of farmers to adopt more improved land use practices in their farming operations. Production of forage on the project during 1956 amounted to approximately 1700 tons, sufficient to supplement the winter feed requirements of the 3200 head of cattle, and 2200 head of sheep owned by farmers using the project.

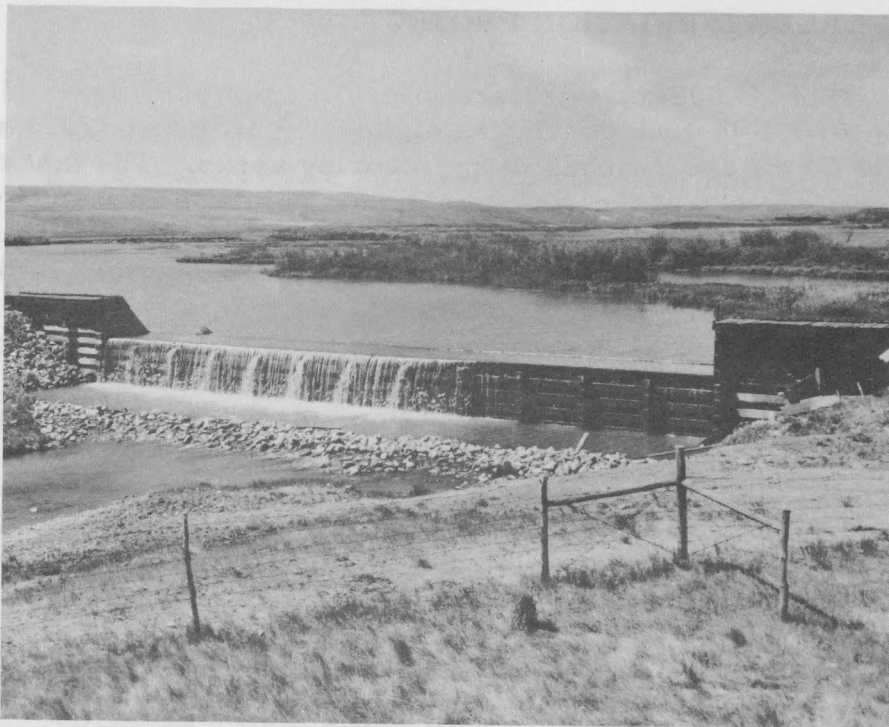
Alkali problems have developed in certain sections of the project due to seepage. Intensive work has been conducted during recent years by the Drainage Division of P. F. R. A. to reclaim these areas and prevent further seepage problems developing.

During the past season, P. F. R. A. purchased additional land on the project for irrigation development. This area, commonly referred to as the Uglum extension, consists of approximately 550 acres of irrigable land on the south side of the river approximately half way down the project to the southeast of the town of Eastend. The land, which will be developed in 1957 is considered to be ideally suited for

irrigation and will be a valuable addition to the project. A further 150 acres of privately owned land exists in this area which can be served by the canal which will supply water to the Uglum extension.

CONSUL IRRIGATION PROJECT

This project is located in the very heart of the dry area of the prairies. Farmers who settled in this region in the early days found they could not make a living from straight grain farming and eventually had to relinquish their holdings or branch out into livestock production. The region is ideally suited for raising cattle when a reliable source of feed is established. Fodder crops in turn, require irrigation, and this creates a constant demand for irrigated land in the Consul district.



Wilson Weir on Battle Creek - one of several structures on streams rising in the Cypress Hills which have been built by P. F. R. A. to make maximum use of water resources in this region for irrigation and stockwatering purposes.

Ref. #10881

There were 50 plot holders on this Consul Project during 1956, irrigating 2540 acres of land of which approximately 95% was devoted to fodder crops. Two thousand three hundred tons of hay were cut off this area in 1956. In addition, the hay lands were used extensively during the fall of 1956 for grazing.

Four hundred and eighty acres of land on the Richardson-McKinnon section of the Consul Project and at Nashlyn, are under development. Of this amount, some 230 acres will be ready for lease to farmers in 1957. The development of a further 700 acres of land mainly in the Nashlyn district, is also being seriously considered for irrigation development during the next three or four years due to the continuing demand by farmers for more land on the project.

P. F. R. A. crews and equipment were kept busy during the year, cleaning and repairing ditches and canals, controlling weeds and re-grassing old ditch banks, and repairing irrigation structures as part of the normal maintenance work carried out on the project each year. In addition, P. F. R. A. assisted farmers on the project to level 325 acres of land with scraper plane leveller during 1956.

MAPLE CREEK IRRIGATION PROJECT

This 10,000-acre irrigation project provides assured feed supplies for a livestock population of 10,000 cattle and 2,000 sheep on some 130 farms and ranches in surrounding areas. The fact that Maple Creek is one of the leading shipping points in Saskatchewan for cattle, points to the importance of the irrigation project to that industry as a source of assured feed supply. Over 10,000 tons of feed were produced on the project during 1956.

Much of the work carried out by project forces during 1956 was devoted to project improvement. Farmers were assisted to level their land more efficiently for irrigation, many worn out irrigation structures were repaired or replaced and canals in many areas were cleaned and otherwise repaired.

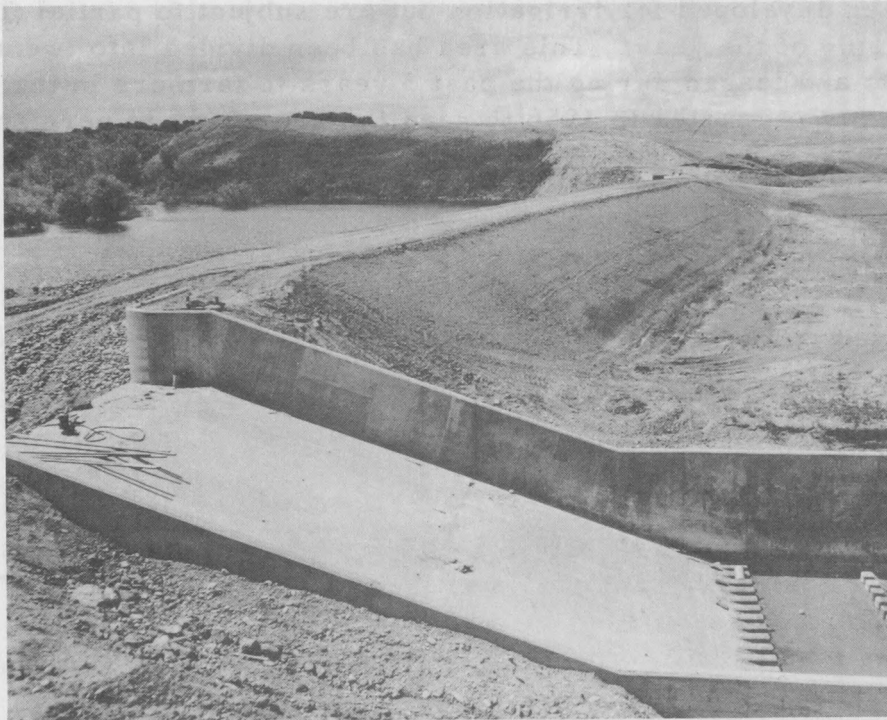
A major undertaking, the construction of the Harris Dam and appurtenant works, was completed in 1956, which should materially improve the critical water supply situation on Maple Creek Flats. To complete the job in 1956 involved topping the dam with a 7-foot fill, riprapping, and compaction of dirt surrounding the diversion outlet pipe to Maple Creek.

Work was continued during 1956 to reclaim areas on the project, particularly on the Upper and Lower V's, which, due to high water table have become alkaline and unproductive. This included the installation of improved surface drainage facilities and the establishment of deep-well pumping sites in the more seriously effected areas. During the summer season, electric pumps were installed in 4 wells on the Lower 'V' Flats and a fifth well was constructed. In addition to having the effect of lowering the general level of groundwater on the Lower 'V' Flats with the use of these wells, it is expected that the water derived from the wells will be of sufficiently suitable quality to be used again for irrigation.

Land development on the project during 1956 was confined to a 235-acre block of land on the Maple Creek Flats, and 75 acres of

rougher dry land bordering Maple Creek which will be used as irrigated pasturage. Two hundred and fifty acres of land developed and seeded to grass in 1955 were leased out for hay production during 1956.

There is a definite trend on this project among farmers, to enter into more specialized fields of agricultural production. In particular, feed lots for cattle are becoming more common. It has been found that by fattening cattle on the project and selling them in carload lots, it is possible to command higher prices. In addition, several small dairy herds and poultry flocks have become established. A local creamery in town provides a ready market for this form of produce.



Diversion Dam and Spillway on Maple Creek
with the outlet structure to Harris Reservoir
in the background. Ref. #10976

SWIFT CURRENT IRRIGATION PROJECT

There are approximately 21,000 acres of irrigable land on this project, of which some 12,000 acres have been, or are under-going development at the present time in the irrigation districts of Swift Current, Waldeck, Rush Lake and Herbert. The Swift Current, Waldeck and Herbert irrigation districts use water supplied to them through P. F. R. A. works which they purchase at a nominal charge. Otherwise, being largely privately owned, they operate independently of P. F. R. A. The Rush Lake District on the other hand, consists

mainly of Crown owned land and is being developed by P.F.R.A. in accordance with the Government of Canada's rehabilitation policies.

In the northern section of the Rush Lake District there are 4,700 acres of land divided into 149 forty-acre plots which are let out on yearly lease to farmers, principally for hay production. In addition, smaller building lots adjacent to the village of Rush Lake have been set aside for farmers who wish to settle permanently on the project. Of the 13 farmers now established on these building lots, 7 have gone into dairying and now have well-established dairy herds. For summer grazing these farmers depend upon irrigated pasturage, and for winter feed supplies, forage produced on the project.

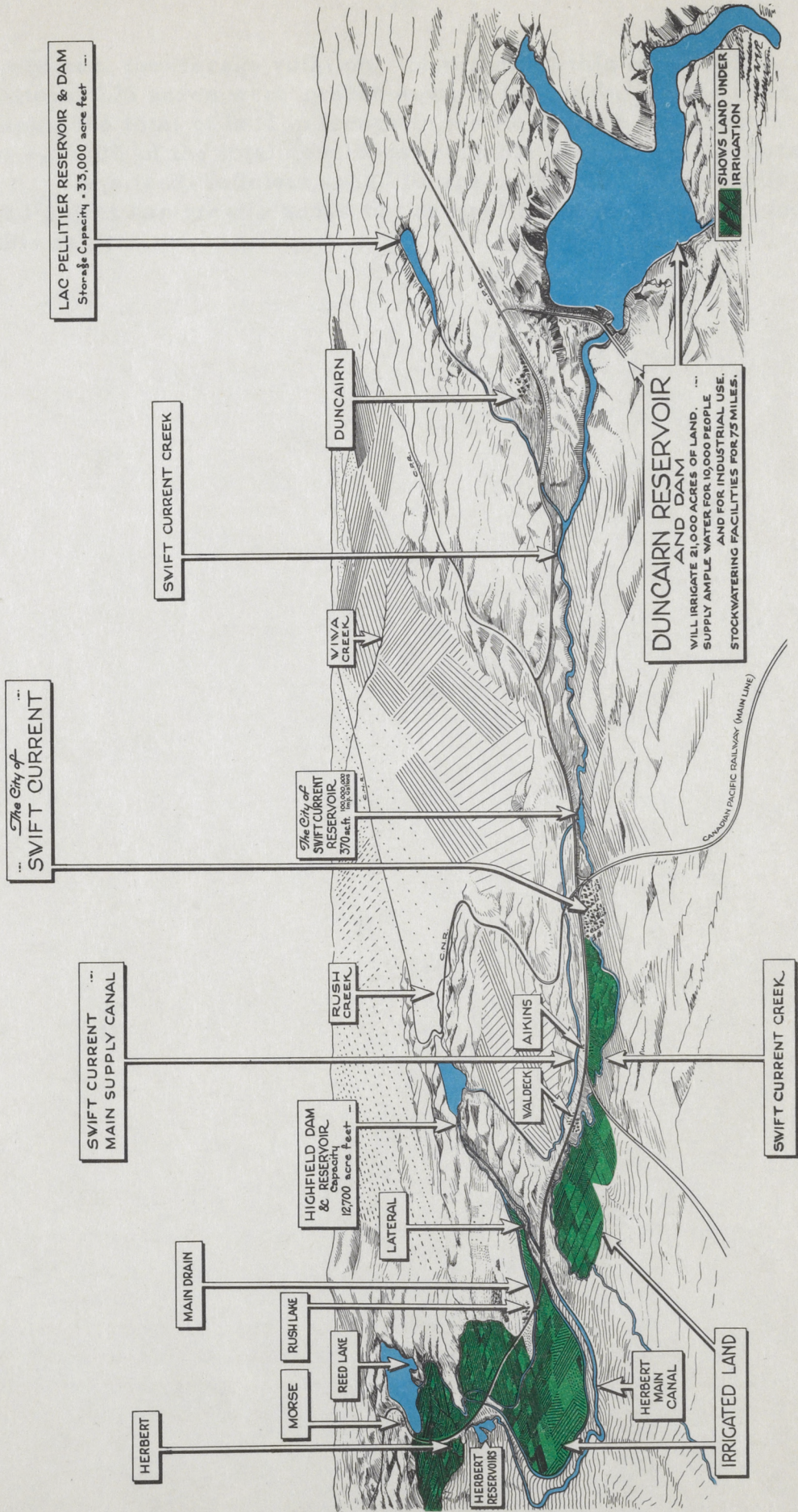
South Rush Lake contains 1,500 acres of land which have not as yet been developed for irrigation but are subject to partial flooding in the spring of the year. This area has been divided into twenty 40-acre plots and leased during the past 5 years to farmers in the district. A program was started in 1956 to seed the area down to permanent forage crops.



Baled hay produced under irrigation on the Rush Lake Flats - Swift Current Irrigation Project.

Ref. #11034

All season project forces and equipment were steadily employed installing and repairing structure, repairing ditch banks, levelling spoilbanks and cleaning supply and drainage ditches, as well as continuing with the program started in 1951 of getting all land on



MARCH 31, 1957.

STATE III

STATE III

the project, into forage rotation. In regard to this latter work, an additional 775 acres were seeded down to forage during the year, bringing the total of land in forage in the Rush Lake District, to 3540 acres or 75% of the total developed irrigable acreage on the flats.

In a feed-deficient area, forage production on the Swift Current Project has greatly added to the stability of the livestock industry in this region.

WATER DEVELOPMENT PROGRAM

Conservation of water on farms in rural communities is having an ever increasing effect on the stability of Western Canadian agriculture. Water, as a natural resource, is second only to soil. One of the primary objectives of the Prairie Farm Rehabilitation Act was to introduce a water conservation program which would afford greater economic security to the agricultural population of Western Canada. This program is under the supervision of the Water Development Branch.

Three main phases of water conservation are undertaken by this Branch of P. F. R. A.

INDIVIDUAL AND NEIGHBOUR PROJECTS



A well-protected, conveniently located farm dug-out typical of many constructed with P. F. R. A. assistance, supplying water for domestic use as well as irrigation of the farm garden.

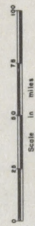
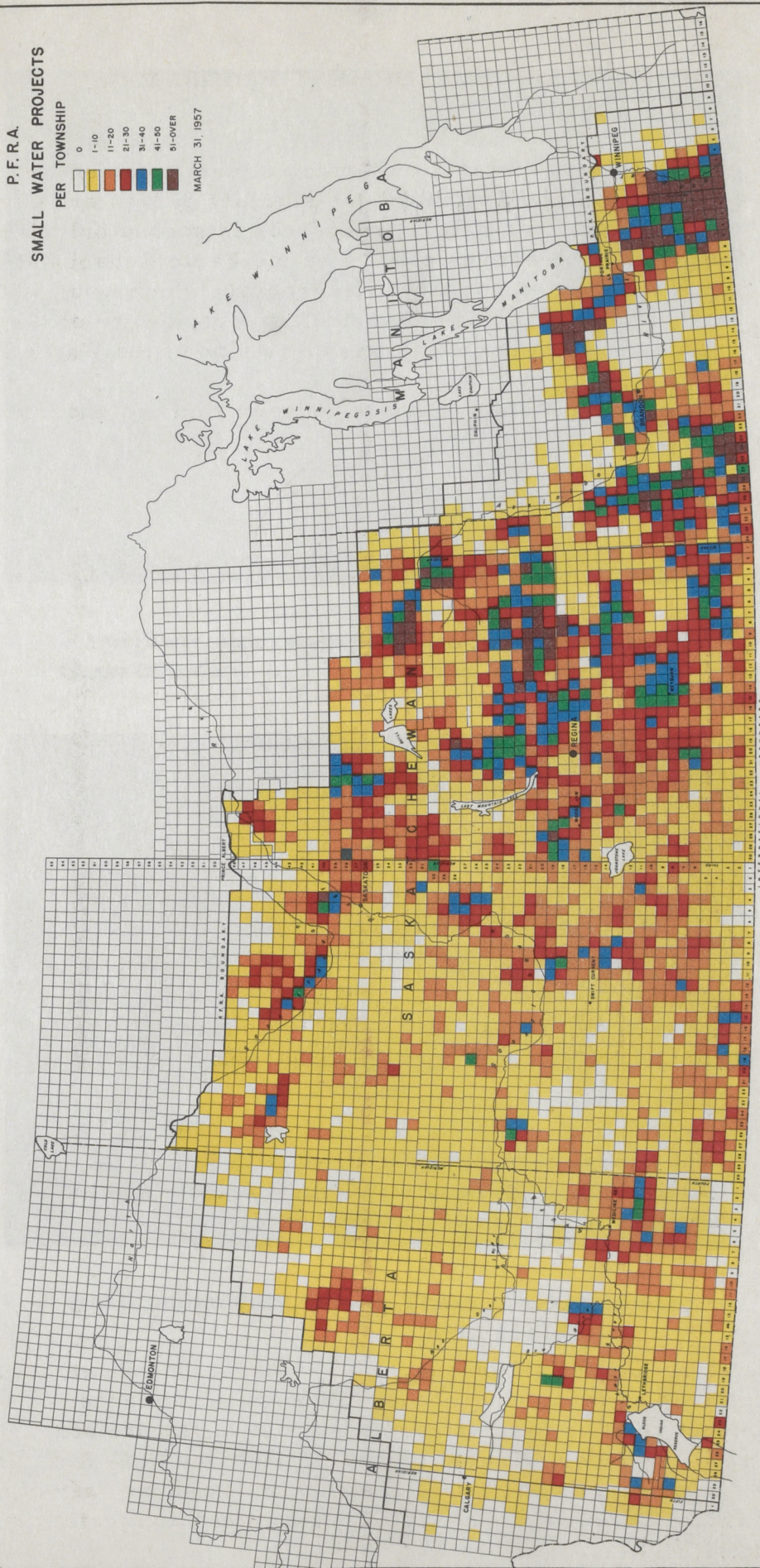
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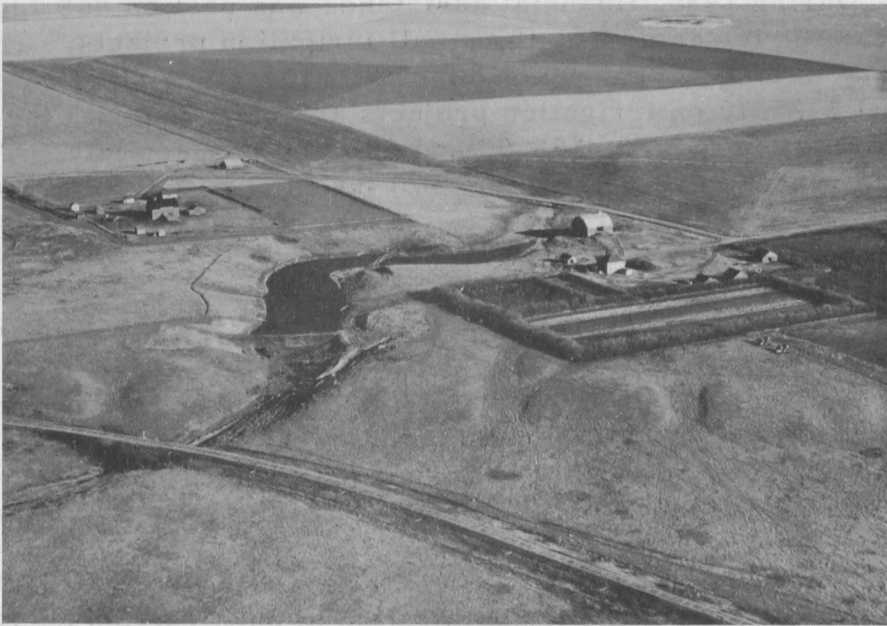
These projects, which usually do not cost in excess of \$1000.00, are designed to conserve run-off water for domestic use, stockwatering and irrigation purposes, in properly located dugouts, dams or dikes on farm watersheds. Financial assistance is provided in an amount relative to the size and purpose of the project. In addition, all engineering services are provided by P. F. R. A. free of charge. The responsibility for construction, however, remains with the individual or neighbouring farmers who make application for the project.

P.F.R.A.
SMALL WATER PROJECTS
PER TOWNSHIP



MARCH 31, 1957





A neighbor stockwatering dam in southwestern Saskatchewan. Ref. #5952



A small community dam at Truax, Saskatchewan. Ref. #11771

During 1956, financial assistance was paid on 868 dugouts, 143 stockwatering dams and 107 small irrigation projects. The assistance averaged \$107.50 on dugouts, \$104.60 on stockwatering dams and \$225.70 on irrigation projects as compared with the long-time average of \$107.52, \$88.00 and \$234.00 respectively. These payments represent about one-third of the total outlay for construction of individual and neighbor projects. Rates of assistance have remained unchanged during the past year.

SMALL COMMUNITY PROJECTS

Agricultural groups wishing to utilize the water of the more well defined watersheds on a community basis may apply to P. F. R. A. for assistance, the extent of the assistance granted is determined on the basis of individual merit. These projects usually do not exceed \$15,000 in cost.

Construction was started on 34 new small community projects during 1956 in addition to the continuation of construction on 16 small community projects only partially completed the previous year. Of the 30 reported completed by the fiscal year end, 13 were stockwatering dams and dugouts, 14 were multiple-purpose reservoirs and 3 were flood irrigation projects.

LARGE COMMUNITY PROJECTS

When a project costs in excess of \$15,000 yet is too small to be considered in the category of a major irrigation or reclamation development, P. F. R. A. usually agrees to undertake the construction of the capital works, provided the province or community concerned will undertake the development and maintenance of the project after it has been completed. Actual construction of these projects is by competitive bid under the supervision of the engineering division of P. F. R. A. Projects of this kind usually provide one or more of the following services - stockwatering, water storage, flood control, irrigation and reclamation. Those serving several purposes are termed multiple-purpose projects; others are designated according to their principal function.

Ten large community projects previously investigated by the field force of P. F. R. A. were advanced to the construction stage. Following is an outline of each of these projects, indicating the location, use and type of development, and purpose.

Adair Creek Dam

This combination stockwatering and water storage dam, constructed on the Adair Creek about three miles south of the town of Wolseley, has a storage capacity of 350 acre feet. Besides maintaining and controlling the flow of water in Adair Creek, thereby affecting 120

COMMUNITY WATER DEVELOPMENT PROJECTS

COMPLETED IN 1956

MANITOBA

<u>Name of Project</u>	<u>Location</u>	<u>Type of Project</u>
1. Killarney	Killarney	Multi-purpose Reservoir
2. Oak Lake	Oak Lake	Irrigation
3. Turtle Mountain Res.	Boissevain	Multi-purpose Reservoir

SASKATCHEWAN

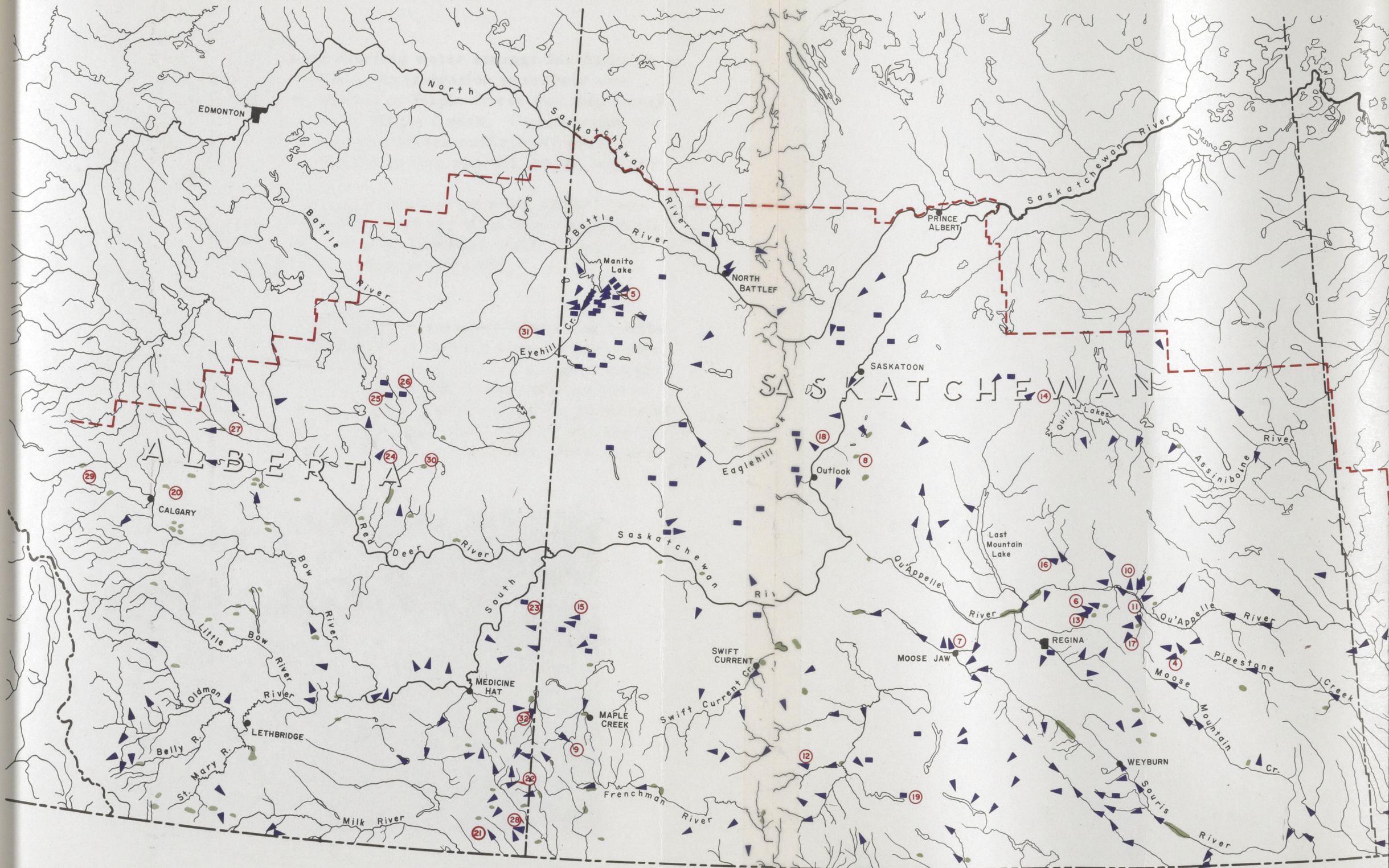
4. Adair Creek	Wolseley	Multi-purpose Dam
5. Alpine	Senlac	Dugout
6. Avonhurst	Qu' Appelle	Stockwatering
7. Boharm Community Dugout	Boharm	Multi-purpose Reservoir
8. Bright Water Creek	Hanley	Irrigation
9. Harris Reservoir	Maple Creek	Irrigation
10. Hugonard Coulee Dam	Lebret	Multi-purpose Reservoir
11. Jubilee	Indian Head	Multi-purpose Reservoir
12. Kincaid	Kincaid	Stockwatering
13. Koch-Froh	Qu' Appelle	Multi-purpose Reservoir
14. Leroy, R.M. of	Leroy	Stockwatering
15. Prospect Grazing Co-op.	Linacre	Stockwatering
16. Southey, Village of	Southey	Multi-purpose Reservoir
17. Sunny South	Indian Head	Multi-purpose Reservoir
18. Swanson Co-op. Pasture	Donavon	Stockwatering
19. Twelve Mile Lake	Maxstone	Flood Irrigation

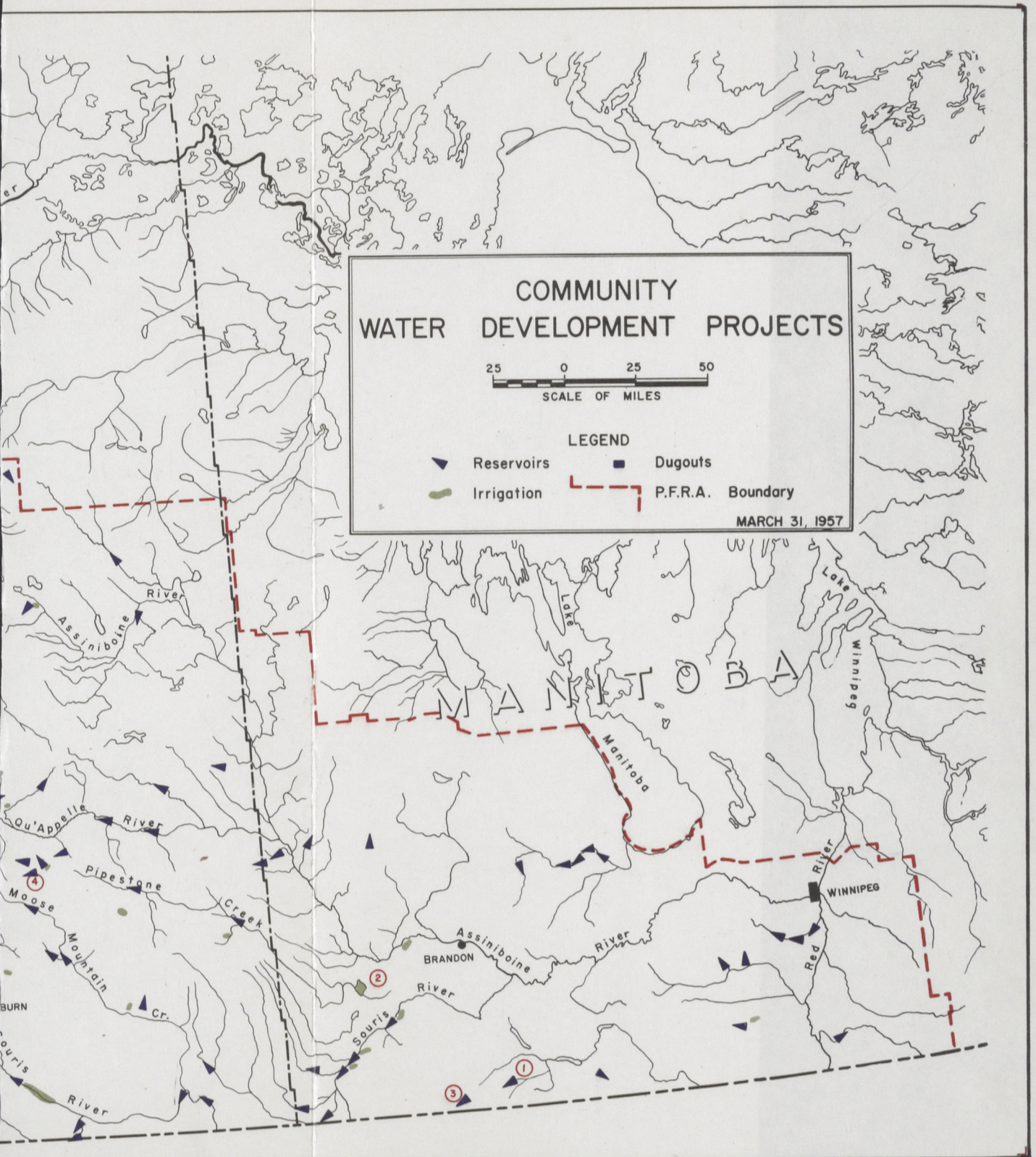
ALBERTA

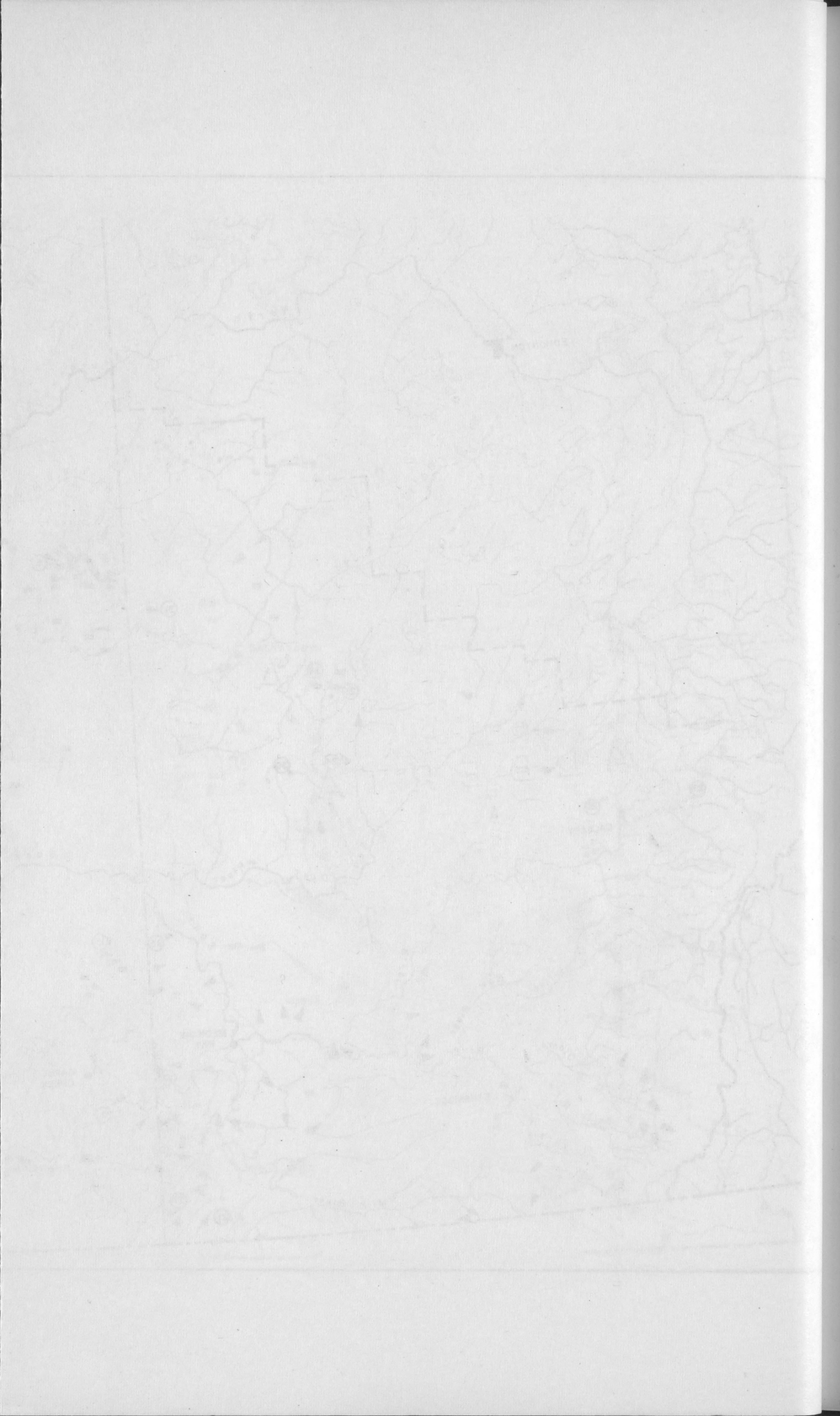
20. Balzac	Balzac	Irrigation
21. Bare Creek #2	Comrey	Multi-purpose Dam
22. Bluefield Grazing Assoc.	Thelma	Stockwatering
23. B. T. Grazing Co-op.	Hilda	Stockwatering
24. Collins	Sheerness	Stockwatering Reservoir
25. Fertility Grazing Assoc.	Hanna	Stockwatering Reservoir
26. Garden Plains	Hanna	Stockwatering
27. Grainger	Three Hills	Multi-purpose Reservoir
28. Jaydot	Elkwater	Multi-purpose Reservoir
29. Morley	Morley	Stockwatering
30. Naismith	Youngstown	Multi-purpose Reservoir
31. Provost, Village of	Provost	Multi-purpose Dam
32. Stehr Coulee	Walsh	Multi-purpose Reservoir

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farmers, this dam will also maintain the supply of water in the local reservoir which now serves a community of about 1000 people. In addition, this dam will give some measure of flood control in the Qu' Appelle Valley.

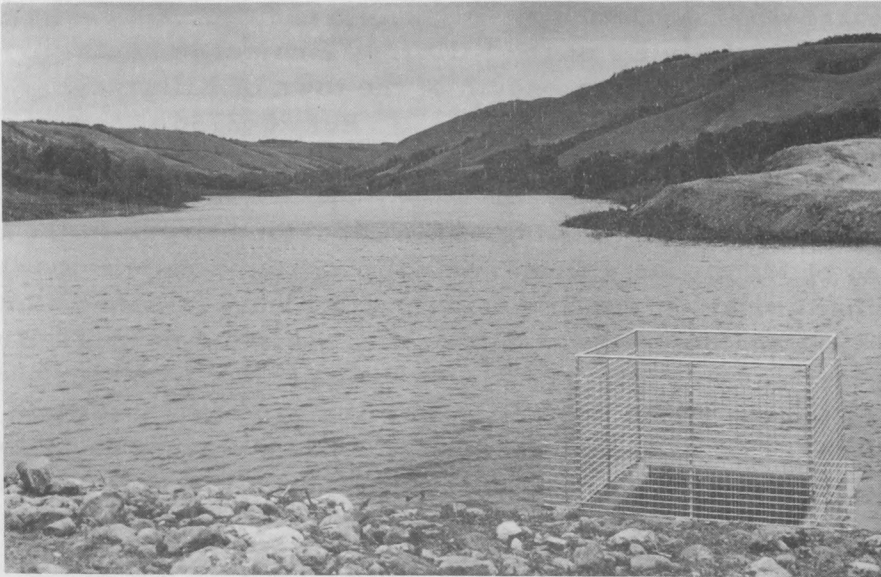
Harris Dam and Reservoir

In order to supplement existing water storage facilities on the Maple Creek Irrigation Project, an irrigation reservoir was constructed between the West Branch of Maple Creek and Gap Creek about six miles south of the town of Maple Creek. Construction on this project began in 1955 and was completed sufficiently early in 1956 to allow water stored during the spring run-off, to be used for irrigation during July.

The Harris Reservoir has a storage capacity of 5000 acre feet of water. This water, diverted from the West Branch of Maple Creek, through a canal system, may be released either down Gap Creek or returned to Maple Creek as it is required.

Hugonard Dam

The construction of this multiple-purpose dam about 1 mile north of Lebret has created storage for about 400 acre feet of water, which is to be used for stockwatering, irrigation and a water supply for the village of Lebret. It is estimated that it will be possible to irrigate up to 100 acres from the reservoir, including the gardens of the Lebret Indian Farm School. In addition, this project will aid in flood control in the Qu' Appelle Valley and in the Lebret area in particular.



Hugonard Reservoir showing drop spillway inlet
with guard fence.

Ref. #13433

Killarney Dam

The area around Killarney depends upon Killarney Lake for its water supply. A dam built on White Mud Creek was circumvented by channel erosion. To restore and maintain the level of Killarney Lake, a dam was constructed across the White Mud Creek Ravine, 1 1/2 miles south of Killarney. Besides stockwatering, the water stored in Killarney Lake may, by pumping, be used for irrigation of specialized crops. The maintenance of the level of this lake also assures the town of an adequate domestic water supply.



An aerial view of the Killarney Project in south-central Manitoba, south of the town of Killarney

Ref. #12736

Oak Lake Project

To control the flooding of the Pipestone Creek in the Oak Lake area of Manitoba, a flood control program consisting of channel improvement, diking, and diversion and drainage canals was undertaken in 1955 and completed in 1956. By assisting in controlling the flow of water in the Pipestone Creek, this project will benefit the area in several ways. Flood protection and drainage will facilitate land reclamation. Controlled flood irrigation of hay meadows makes possible, better utilization of the water in the Pipestone Creek.

Bedford Slough

This multiple-purpose reservoir located 30 miles east of Manyberries, Alta., is being constructed to increase the water storage capacity in the Lodge Creek drainage basin. Bedford Slough has

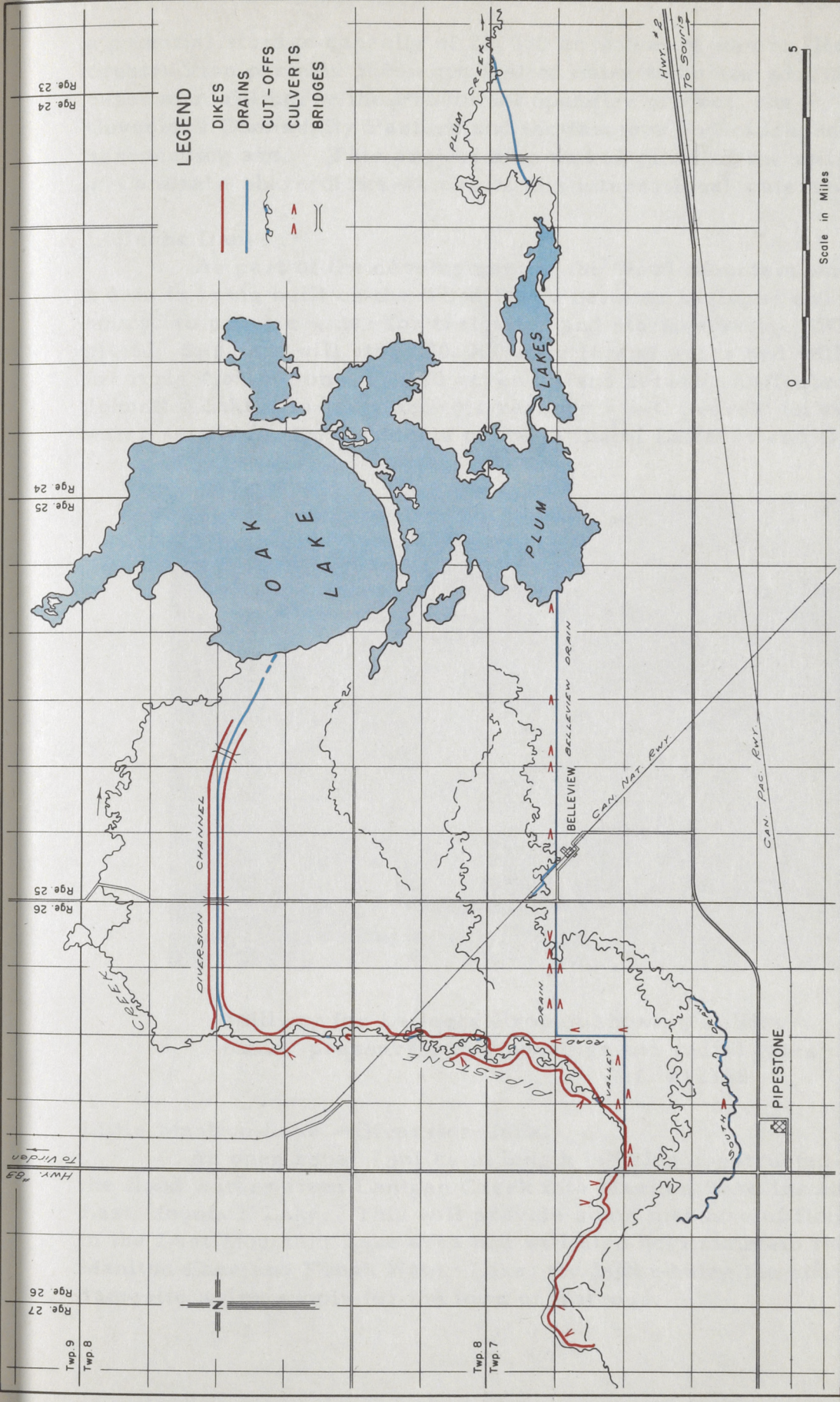


PLATE VI

DEPARTMENT OF AGRICULTURE - CANADA
P.F.R.A.

OAK LAKE PROJECT PROJECT AS CONSTRUCTED

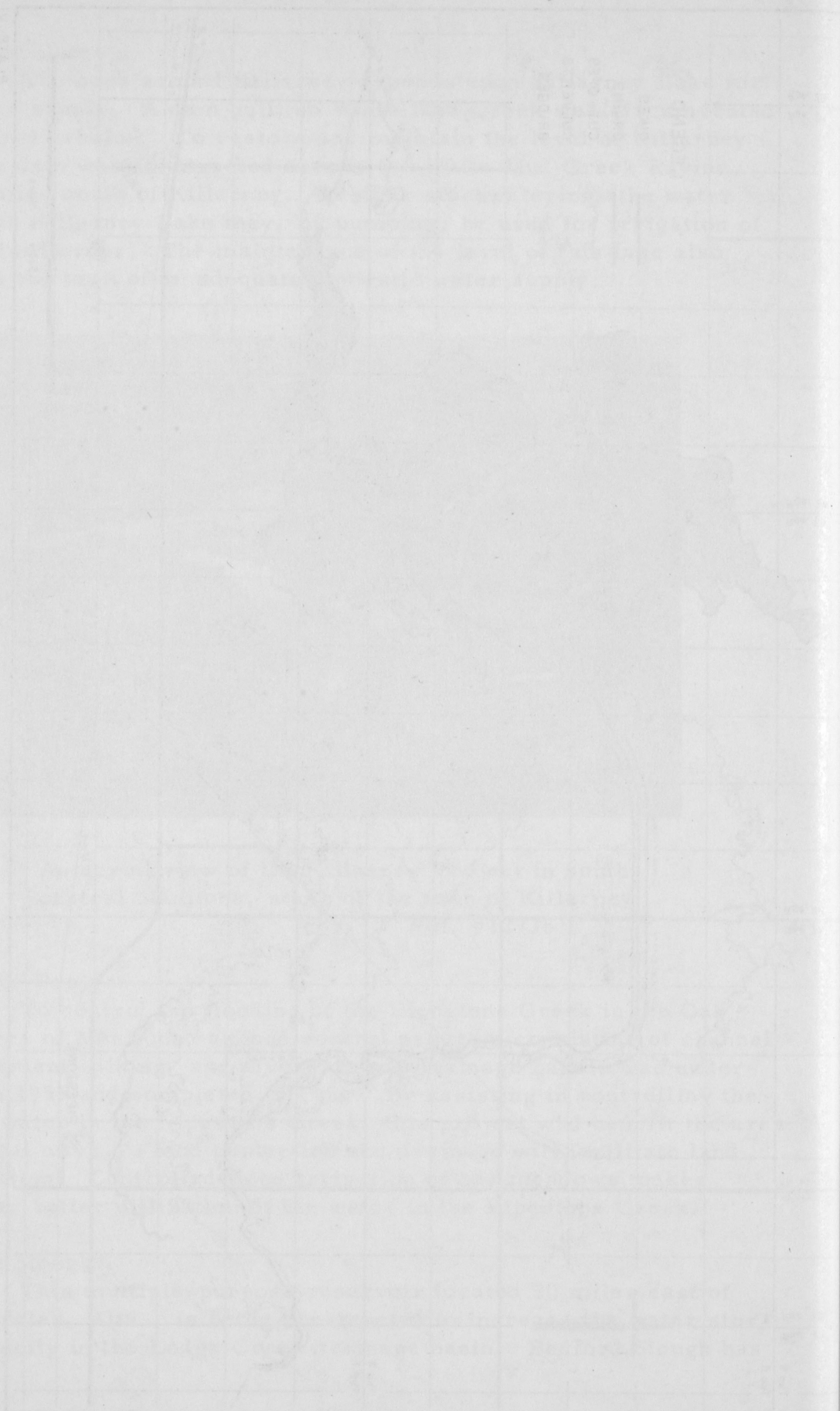
MARCH 31, 1957

PROJECT AS COMPLETED

OKAY TAKE PROJECT

6842

CONSTRUCTION OF BRIDGE



a potential storage capacity of 20,000 acre feet of water. Present construction permits 5000 acre feet of water to be stored. This reservoir will serve the Provincial Spangler project, the P.F.R.A. Govenlock Community Pasture and the farmers and ranchers of the surrounding area. This project also makes possible the utilization of Canada's share of the waters of this international watershed.

Lafleche Dam

As part of the development of the Wood Mountain watershed, a dam is being built on the Wood River between Lafleche and Gravelbourg, to provide water for irrigation and stockwatering. When completed, this dam will store 30,000 acre feet of water and will provide for irrigation of some 15,000 acres of land between Lafleche and Johnston Lake. In addition, this reservoir will provide an available water supply for the residents of the towns of Lafleche and Gravelbourg.



Spillway for Lafleche Project showing stilling basin, pressure relief openings and radial gates

Ref. #12358

Little Manitou Lake - Diversion Canal

An open canal 7 miles in length is being constructed to divert the flood waters from Lanigan Creek into Manitou Lake instead of Last Mountain Lake. This will provide some measure of flood control in the Last Mountain Lake area and will also help maintain the level of Manitou Lake and Fresh Water Lake; the latter being the source of domestic water supply for the town of Watrous.

Rock Lake Dam

To provide increased water storage in the Eastern Irrigation District, a dam is being constructed in Rock Lake Coulee converting this drainage basin into a water storage reservoir. The entire capacity of 11,000 acre feet of water will be usable as there is no dead storage. This will be used to alleviate the water supply problem during the peak of the irrigation season.

Dominion City Dam

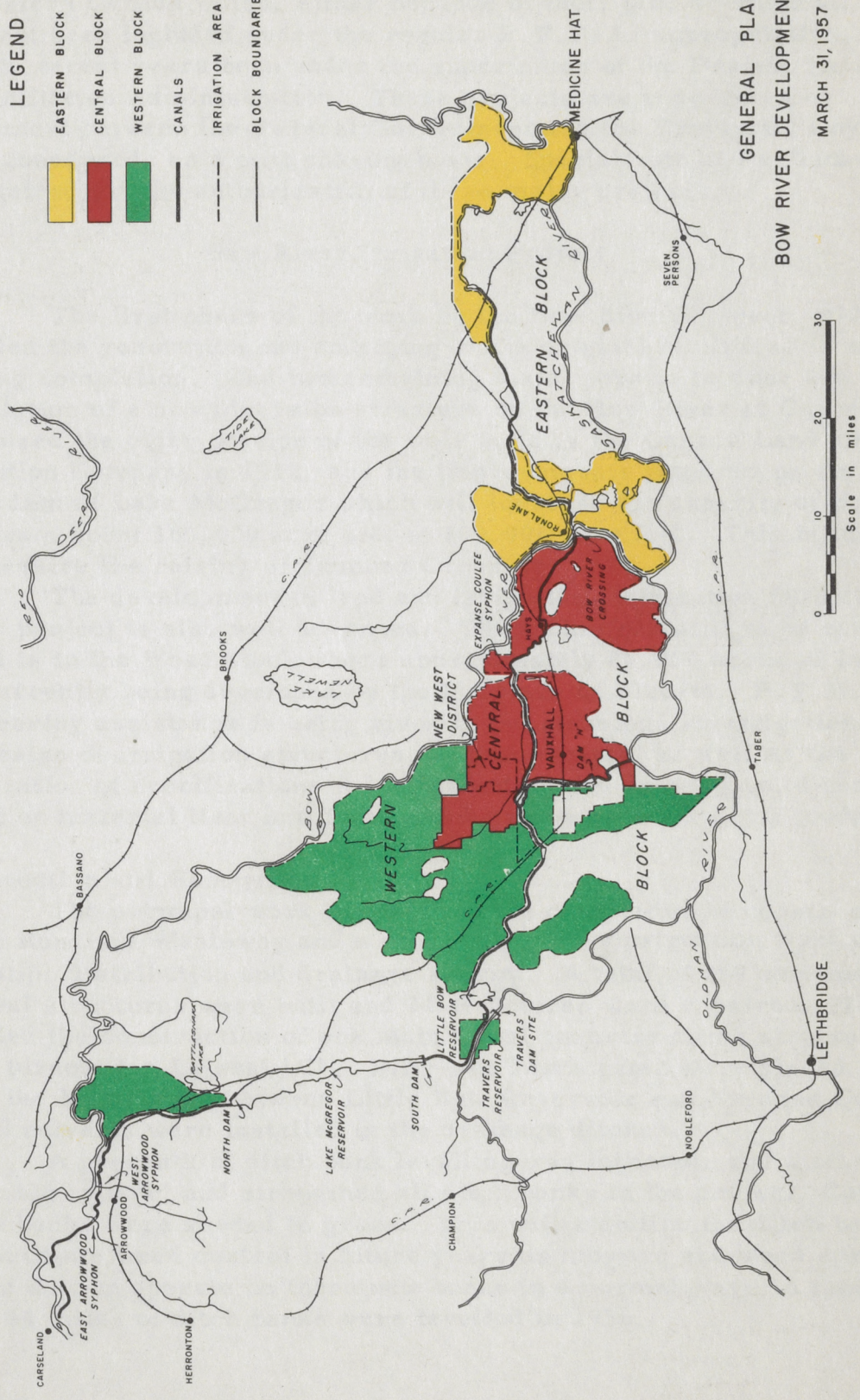
A dam is being constructed at Dominion City which will regulate the flow of the Roseau River. The water storage created by this dam will be used for stockwatering and domestic water supply in the village of Dominion City. In an area where there is no other satisfactory water supply, it is estimated that 105 people will benefit directly and 700 indirectly by this project.

TECHNICAL ASSISTANCE

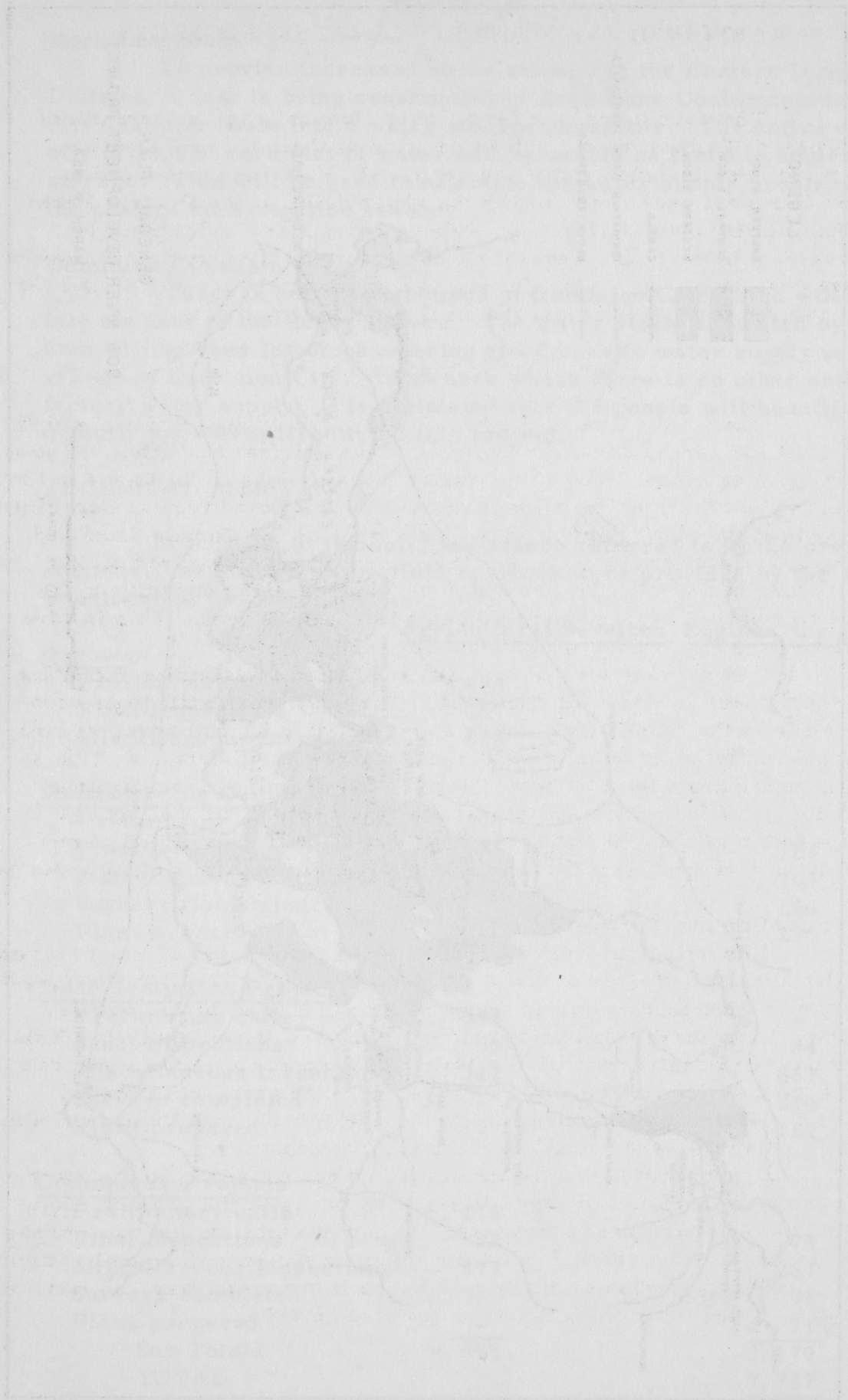
In addition to financial assistance referred to in the previous sections, the following free field services were provided by the Water Development Branch in 1956:-

	<u>Agricultural Services</u>	<u>Engineering Services</u>
<u>Dugouts</u>		
Preliminary calls	888	
Final Inspections	967	
Miscellaneous Inspections	633	
<u>Stockwatering Dams</u>		
Preliminary calls	300	-
Final Inspections	51	164
Miscellaneous Inspections	190	703
Surveys Completed	-	264
Plans prepared	-	230
<u>Small Irrigation Projects</u>		
Preliminary calls	385	-
Final Inspections	50	84
Miscellaneous Inspections	381	867
Surveys completed	-	214
Plans prepared	-	167
<u>Community Projects</u>		
Preliminary calls	114	-
Final Inspections	22	73
Miscellaneous Inspections	577	267
Surveys completed	-	75
Plans prepared	-	71
Sub Totals	4,558	3,179
TOTAL		<u>7,737</u>

- LEGEND**
- EASTERN BLOCK
 - CENTRAL BLOCK
 - WESTERN BLOCK
 - CANALS
 - IRRIGATION AREA BOUNDARIES
 - BLOCK BOUNDARIES



GENERAL PLAN
BOW RIVER DEVELOPMENT PROJECT
MARCH 31, 1957



MAJOR IRRIGATION AND RECLAMATION PROJECTS

The development of large irrigation and reclamation works in Western Canada which, either because of their size or location, have not been included under the regular P. F. R. A. appropriation, have in recent years been under the supervision of the Prairie Farm Rehabilitation Administration. These projects are undertaken by agreement between the Federal Government and the Provincial Government concerned, on a cost sharing basis. Special vote of Parliament is required for the authorization of these major projects.

Bow River Irrigation Project

The first phase of the work on the Bow River Project, which included the renovation and enlarging of the original facilities, is now nearing completion. The two remaining major jobs to be done are the installation of a new diversion structure on the Bow River at Carseland to replace the older portion of the weir built by the Canada Land and Irrigation Company in 1912, and the improvements required on the south dam of Lake McGregor which will increase the capacity of the lake from about 160,000 acre feet to 300,000 acre feet. This in turn will require the raising of Lomond Crossing.

The development of land and irrigation distribution facilities on the project is also well advanced. The main work still to be completed is in the West Block where approximately 80,000 acres of land are currently being developed by the Province of Alberta. P. F. R. A. engineering assistance is being given in the planning, investigation and design of irrigation structures for this project, as well as the preparation of specifications for construction and drawing up of construction material lists in a form which can be used for actual ordering.

Construction and Renovation

The principal work in 1956 was the completion of construction on the Ronalane Wasteway and a continuation of construction work on the irrigation distribution and drainage system. A total of 259 new and renewal structures were built and 34 structures were repaired. This included the construction of one Main Canal concrete check structure and a turnout for Lateral 'C'. Fifty-six Texas gates were placed along the Main Canal between Little Bow Reservoir and Expanse Coulee and 70 culverts were installed in the drainage ditches.

A program of ditch bank levelling was initiated, and a start was made to level and strengthen all ditch banks in the project. Completed banks were seeded to grass. This will stabilize the ditch banks and facilitate weed control in future years as mowers and weed sprayers will be able to operate on these new banks in a normal way. A total of about 54 miles of ditch banks were levelled in 1956.

Drainage work was confined mainly to open drains. Closed drain construction was slowed down until studies could be made of the effectiveness of those installed in previous years. Two closed drains under construction in 1955 were completed in 1956. These were located on the Windmill Flats at Hays and on S. 21-13-16/4 in the Vauxhall area. A total of 5,211 lineal feet of tile was installed.



Ronalane Wasteway used to pass surplus water from the main canal back into the Bow River.

Ref. #13797

On open drain construction, the main work was the deepening of Drain No. 8 between Grantham Lakes and Drain No. 1. This drain was deepened an average of 8 feet for 2 1/2 miles. A number of smaller drains totalling 73,900 feet were constructed during the year. Twenty-two miles of drain were satisfactorily cleaned by use of a chamshell bucket.

Operation and Maintenance

Weather conditions for both construction and crop production were good during 1956. Rainfall was higher than average and crops grown on dry land yielded well. Early spring rainfall was below normal and early season irrigation was heavy. A total flow of 53,512 acre feet of water was used during the season. This was used on 394 farm units in the Vauxhall area and 173 units in the Hays area; 33 of the latter being irrigated for the first time.

The spring run-off into Travers Reservoir was low in 1956 being 26,530 acre feet. A total of 104,237 acre feet were diverted

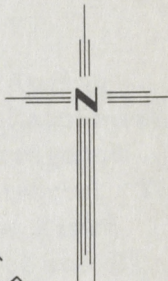
BOW RIVER PROJECT

RESETTLEMENT-HAYS IRRIGATION DISTRICT

MARCH 31, 1957

LEGEND

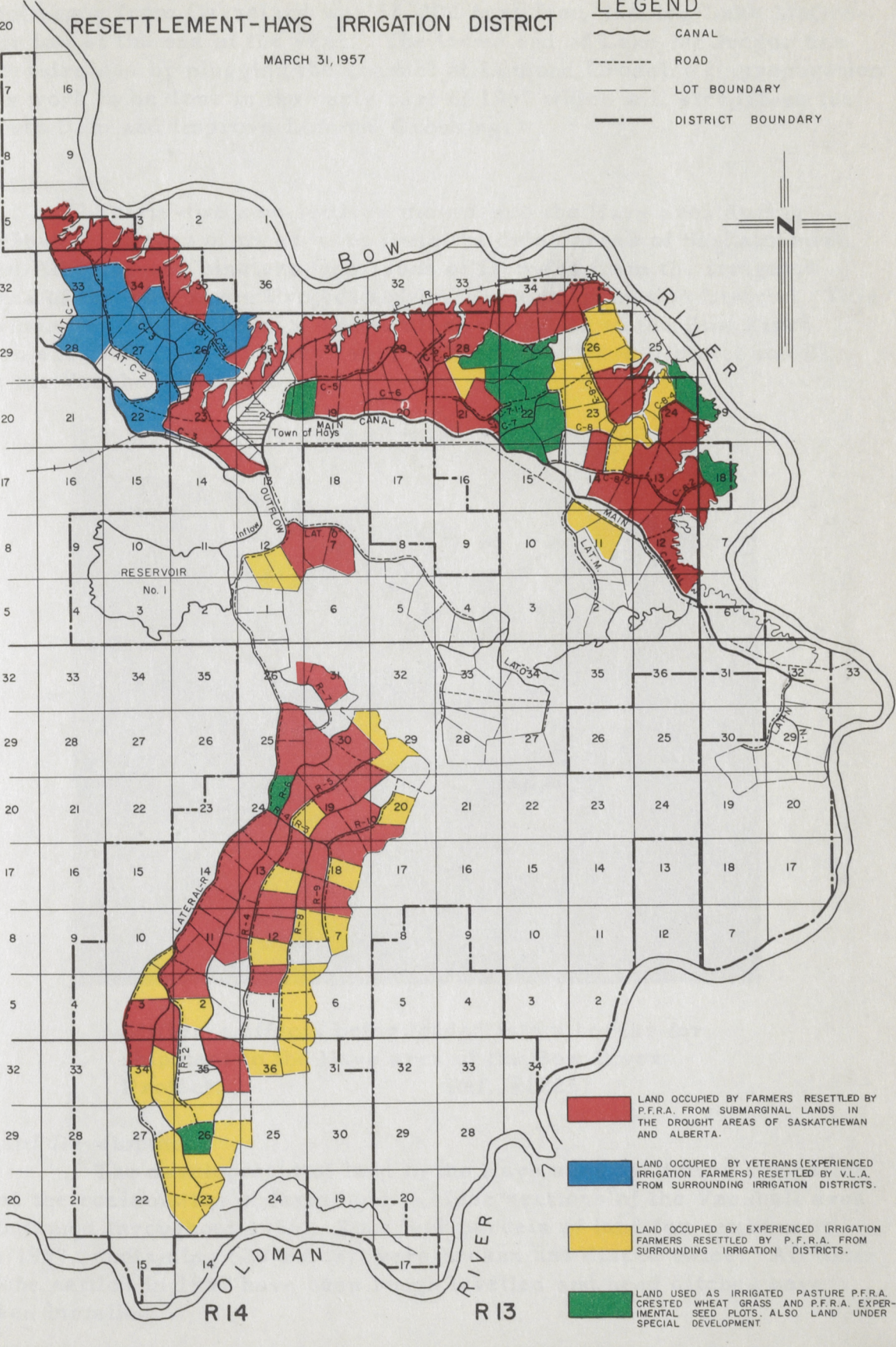
- CANAL
- ROAD
- LOT BOUNDARY
- DISTRICT BOUNDARY



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T 12

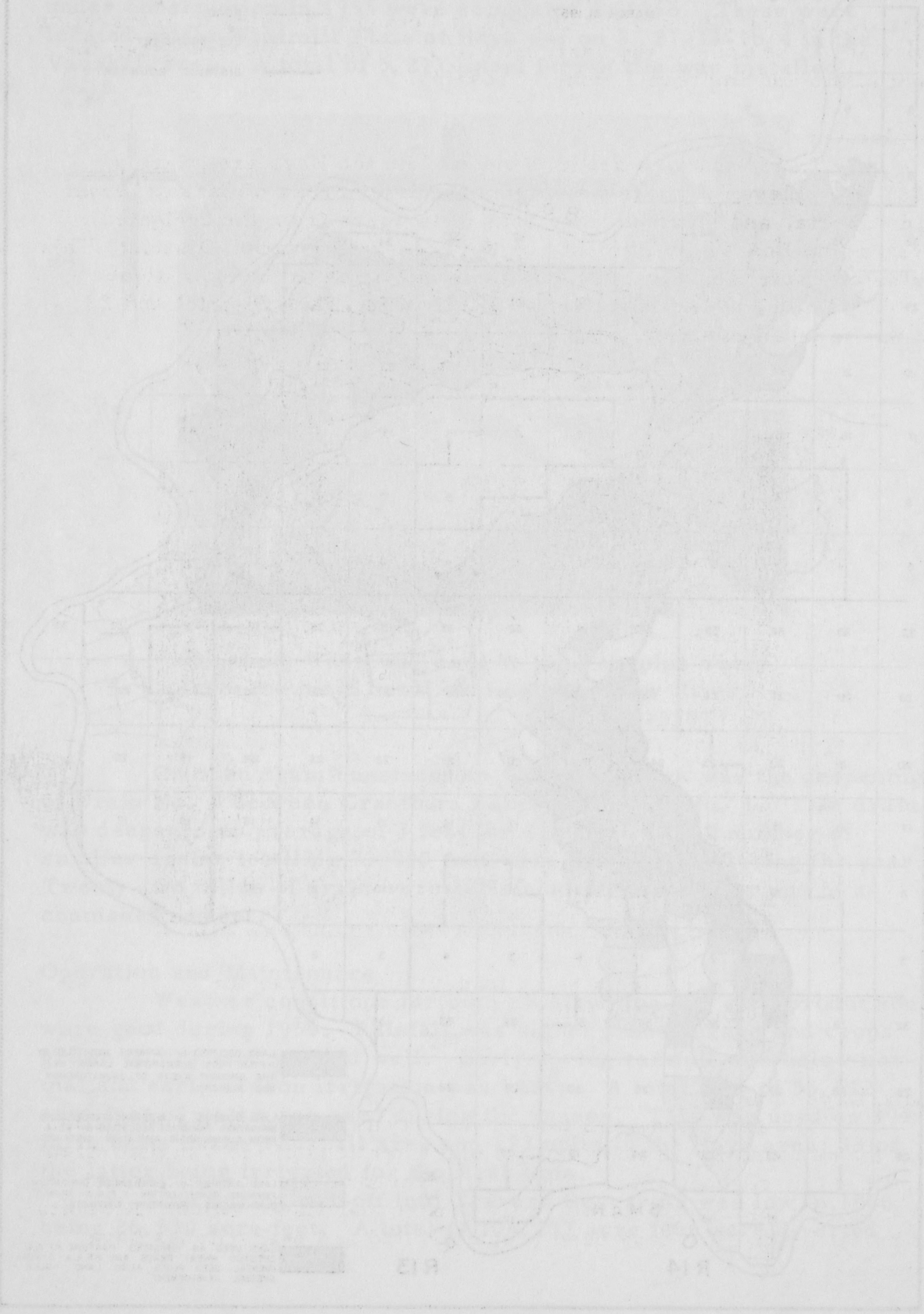


- LAND OCCUPIED BY FARMERS RESETTLED BY P.F.R.A. FROM SUBMARGINAL LANDS IN THE DROUGHT AREAS OF SASKATCHEWAN AND ALBERTA.
- LAND OCCUPIED BY VETERANS (EXPERIENCED IRRIGATION FARMERS) RESETTLED BY V.L.A. FROM SURROUNDING IRRIGATION DISTRICTS.
- LAND OCCUPIED BY EXPERIENCED IRRIGATION FARMERS RESETTLED BY P.F.R.A. FROM SURROUNDING IRRIGATION DISTRICTS.
- LAND USED AS IRRIGATED PASTURE P.F.R.A. CRESTED WHEAT GRASS AND P.F.R.A. EXPERIMENTAL SEED PLOTS, ALSO LAND UNDER SPECIAL DEVELOPMENT.

BOW RIVER PROJECT

SETTLEMENT HAS REGION DISTRICT

1957



from Lake McGregor to Travers Reservoir. The inflow to Lake McGregor from Carseland was 54,300 acre feet, leaving Lake McGregor low at the end of the year. The lower end of Lake McGregor has been drained by plugging the channel at Lomond Crossing in preparation for work to be done in the early part of 1957 which will strengthen the South Dam and improve Lomond Crossing.

Settlement

Thirty-two new settlers moved into the Hays area during 1956-57. Eleven of these were from the drier areas of Saskatchewan and Alberta, and nineteen were sons of farmers from the irrigated area of the Bow River Project and the Eastern Irrigation District. This brings the total number of new settlers moved on to the Bow River Project by P.F.R.A. since 1950, to 158 in the Hays District and 22 in the Vauxhall District.



Settler's effects being loaded into a boxcar for shipment to the Hays area of the Bow River Project.

Ref. #12251

Land Development

The development of land in the Hays area for future irrigation and the reclamation of farm land in older sections of the Vauxhall area continued throughout 1956. Four new parcels of land for settlement in 1957, containing 625 acres, were broken and disced twice. All units to be settled in 1957 have been rough levelled and head ditches have been installed.

Agricultural Activities

Eight hundred and fifty head of cattle with about 300 calves were carried from May 15, to October on 1200 acres of reclaimed pasture area north of Vauxhall. Of the 640 acres remaining to be seeded back to grass, approximately 400 are ready for seeding. The remainder requires further cultivation and the installation of a drainage system to reduce water logging and salinity. On the 2 pastures at Hays, which total 1000 acres, 750 head of cattle and 500 sheep were pastured through 1956. Some experimental work was carried on in the feeding of grain to cattle on pasture. From the results, it is expected that this type of feeding will continue on irrigated pasture.

An active weed control program was conducted during the year. A total of 1045 gallons of 2-4-5 was used in three spray machines from June 15 to August 20 to cover the project. In addition to spraying, grass was established on canal banks and borrow pits to help in the control of weeds.

Efforts to produce forage seed crops are continuing. Crested wheat and Russian wild rye grass, Ladak and Vernal alfalfa, and Lasalle clover are being grown. Yields were down in 1956 due to the older stands running out and severe winterkilling of Lasalle clover. Sodar wheat grass and Merion blue grass have been introduced to the project. Orchard grass has been abandoned as a seed crop.

Eight acres of potatoes and three acres of turnips were grown in 1956. Very satisfactory yields were experienced of both these crops. An above-ground storage for these vegetables was provided by the erection of an insulated Quonset type building. This has proved very satisfactory and it is intended to expand vegetable production and include carrots in 1957.

The Cornwall Canning Company of Taber gave out 15 contracts for the growing of beans in 1 1/2-acre lots. The yield was good and the quality of the beans was excellent. Returns were between \$350.00 and \$450.00 per acre for this crop.

Economic Conditions

Farm prices in 1956-57 showed a slight increase over the previous year. The difficulty of marketing surplus grain crops has had the effect of forcing farmers into increasing numbers of livestock. Fairly high steady prices have encouraged the feeding of livestock on the project, and there is a tendency to extend the feeding period throughout the year.

Grain and vegetable yields were above average. Potato and corn prices were particularly good. Some damage from hail was experienced in the grain crops.



Aerial view of the irrigation pattern adjacent to the town of Hays. Note water being applied to fields in the foreground. The new school built in 1955 is shown in the background (right)

Ref. #13725

Community Development

The town of Vauxhall continued to make gains during the year. A new 12-room school has been started and several new houses have been built. At Hays, the water system was improved and services put in for those who required them. Water and sewer lines were extended for this purpose.

St. Mary Irrigation Project

Ten years have elapsed since P. F. R. A. first began development work to enlarge and extend existing irrigation facilities on the St. Mary Irrigation Project in southern Alberta. The original project served nearly 120,000 acres of land in the Lethbridge-Magrath-Taber districts of Alberta with water for irrigation derived from a simple diversion on the St. Mary River near the International Boundary.

With greater emphasis each year being placed on specialized crops, which need more water, and with increasing demands to bring larger areas of land under irrigation, it became clear that the present

works would be inadequate to supply all requirements. By developing suitable diversion and storage works to fully utilize Canada's share of the St. Mary, Belly and Waterton rivers, it was believed that a dependable water supply could be obtained to assure irrigation requirements for the older irrigation districts, and to extend the irrigated area to another 380,000 to 390,000 acres of land.

In furtherance to this plan, Canada agreed to assume responsibility for the financing and construction of the main reservoirs and connecting canals, and to look after all the planning, engineering and administrative work involved in the development of the project. The province on the other hand agreed to provide the funds required to finance the construction of the project's distribution system.

Works financed and constructed by the Government of Canada since 1946 include:

- St. Mary Reservoir
- Pothole Reservoir
- Ridge Reservoir
- 28 miles of connecting canal
- Belly River Diversion (under construction)

Works financed by the Province of Alberta include:

- Chin Reservoir
- Horsefly Lake Reservoir
- Rattlesnake Reservoir
- Murray Reservoir
- 194 miles of main canal
- Distribution system to serve 176,000 acres

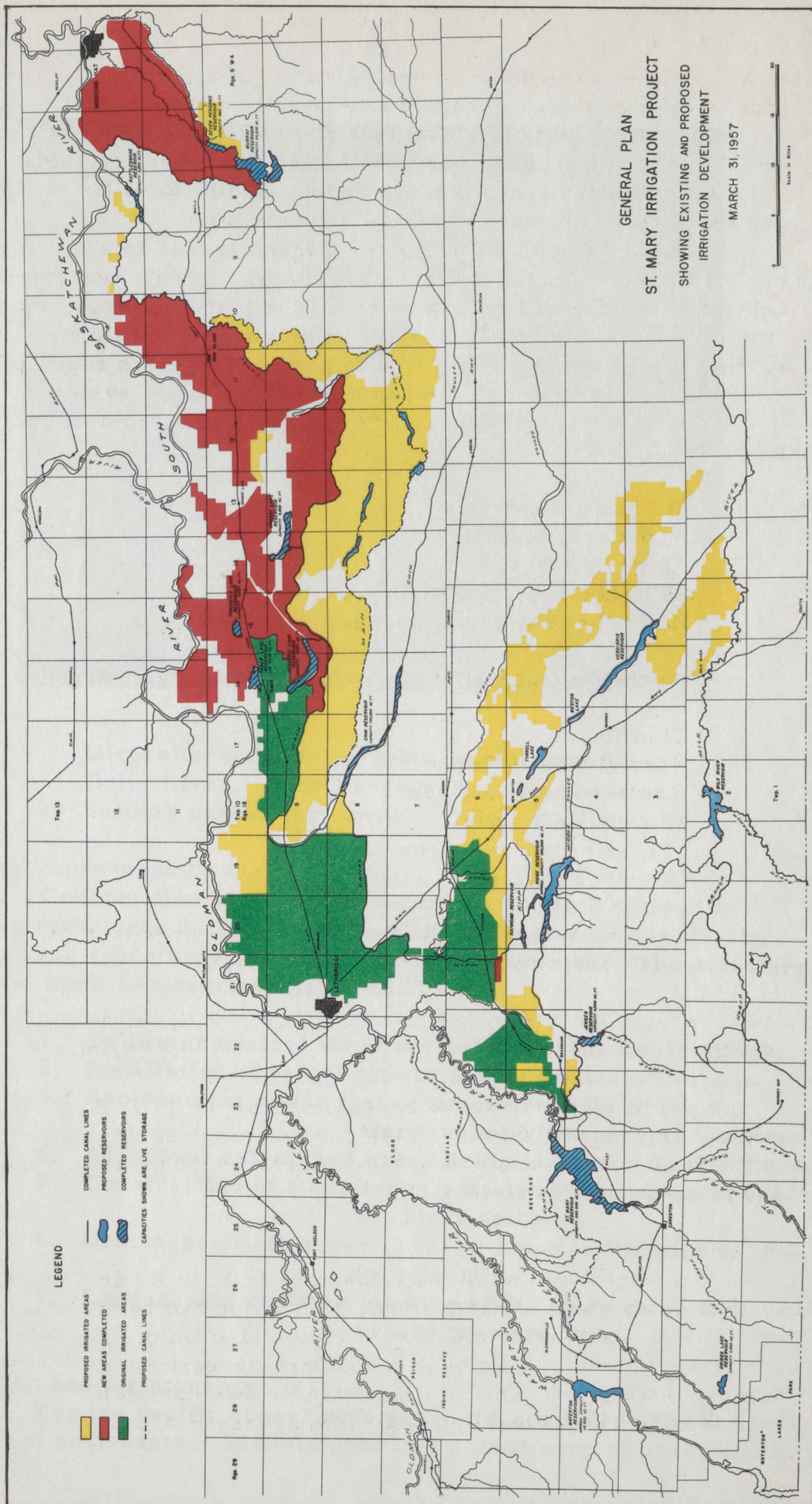
The capital funds expended under the Agreement, by the two Governments to March 31, 1957 are as follows:

Government of Canada (through P. F. R. A.)	\$18,401,000.00 (approx.)
Government of Alberta	\$16,699,000.00 (approx.)

Included in the above expenditure by the P. F. R. A. is approximately \$2,000,000.00 which was spent on engineering and administration of provincial work, leaving \$16,400,000.00 that was spent on Canada's portion of the project.

Construction

Construction work undertaken by P. F. R. A. during 1956 included completion of North Ridge Dam which had been previously started, and the near completion of East Ridge Dam. In addition, seven contracts on the Belly River Diversion works and 22 miles of main canal were let. One of the contracts was completed during the year. Work on the remaining contracts averaged about 60% complete.





1:50,000

88



Diversion canal below inlet control gate from Belly River. In this section the river bank is used as part of the canal. Ref. #13708

Project Improvement

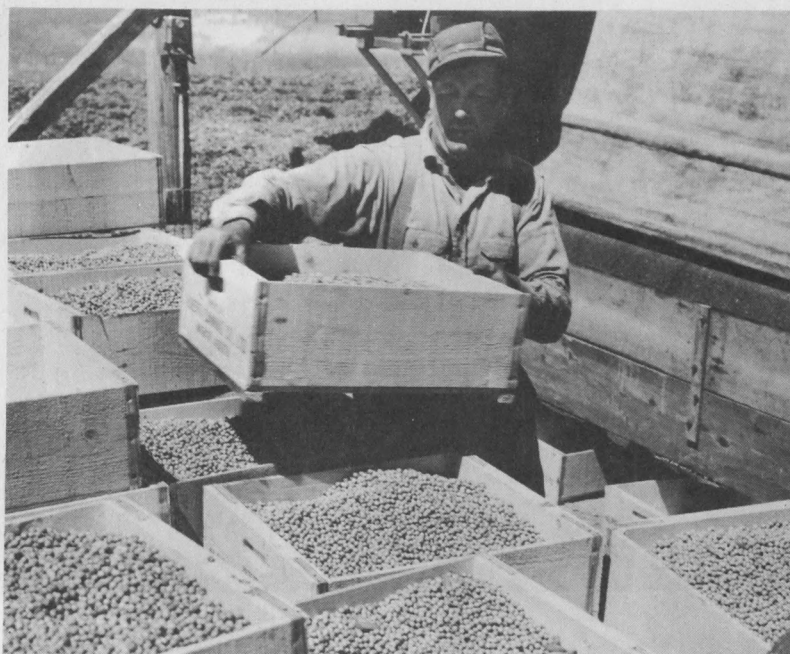
Construction work was also carried out on a number of existing structures during the 1956-57 fiscal year which in the light of operating experience, showed need of improvement. The structures on which work was carried out included -

1. Tailwater control structure below Taylor Coulee Chute.
2. Installation of radial gate at Spring Coulee underpass.
3. Replacement of 200 feet of timber catwalk in the St. Mary tunnel with concrete walkway.
4. Additional cut-off and cross drain in Taylor Coulee Chute.
5. Construction of a portion of a drainage tunnel under the St. Mary spillway.
6. Drainage outlets above 17 large drops in Division 5 (provincial)
7. Landscaping and tree planting at St. Mary camp and around the reservoir.

Operation and Maintenance

For the twelfth consecutive year, the normally semi-arid regions of southeastern Alberta produced a good crop of grain without

the aid of irrigation. Irrigation in the new areas of the project was confined, therefore, to irrigated pastures, hay production, and to a limited extent on specialty crops, which are beginning to make an appearance.



Pea harvesting on the St. Mary Irrigation Project, north of the town of Magrath, Alberta.

Ref. #13674

The older districts on the project used irrigation water steadily during the summer, since the specialty crops grown required much more water than even a wet year can provide from natural precipitation.

The following table shows the development of the project acreagewise, along with water consumption since 1952:-

<u>Season</u>	<u>New works constructed to serve</u>	<u>Old districts served approximately</u>	<u>Water delivered to a total of</u>	<u>Water delivered acre feet</u>
1952	37,000 ac.	118,000 ac.	130,000 ac.	186,000
1953	54,000 "	118,000 "	135,000 "	196,000
1954	96,000 "	118,000 "	158,000 "	246,400
1955	141,000 "	118,000 "	159,700 "	190,000
1956	168,000 "	118,000 "	149,000 "	202,430
1957	176,000 "			

Maintenance work included the repair of the floors of 2 drop structures in Division 5 (provincial). These floors were damaged by frost heaving during the severe fall of 1955, when temperatures dropped to 20 degrees below zero before the structure was drained. This also prompted the construction of the turnout drains previously mentioned. On the P. F. R. A. portion of the project, maintenance work was confined mostly to placing of riprap below structure, road allowance, bridge maintenance and other more or less routine work.

South Saskatchewan River Development Project

A brief description of this project is contained in the P. F. R. A. Annual Reports of previous years. The present proposal is to develop the waters of the South Saskatchewan River to irrigate some 500,000 acres of land in central Saskatchewan. This project would also provide for power development, flood control, stream flow regulation, urban water supply, and recreation. Survey work on the Saskatchewan River commenced in 1943 to determine the feasibility of development. From an engineering standpoint this has now been established and sufficient information has been gathered to proceed with construction should it be decided to do so. During 1956 investigational work was confined to carrying on studies of a continuing nature which are of value in making minor alterations and refinements to existing engineering plans.

Engineering Investigations

An extensive program of stream flow measurements, water elevation observations and silt sampling was continued on the South Saskatchewan River at Outlook and the North Saskatchewan River at Borden. Besides adding information to the long-term sedimentation and flow studies of the South Saskatchewan River Project, this information also assists in the sedimentation studies of the Saskatchewan River Reclamation Project.

A comparatively small amount of foundation drilling was continued at the Coteau and Summit Damsites. An additional 16,000 acres of topographic mapping in the proposed irrigable area was completed, and several small surveys were undertaken in connection with actual or potential drainage problems in the project area.

In addition to this investigational work, supervision was provided for the construction of the Lanigan Creek Diversion canal project. This project was about 60% completed in 1956.

Pre-Development Farm

A pre-development farm has been established at Outlook to study farm practices and irrigation methods which will be invaluable to the farmer if irrigation is introduced to this area. One hundred and fifty-five acres of this farm are operated by P. F. R. A. to evaluate



Site of the proposed South Saskatchewan River dam. Flags on the west bank indicate the fill area. Ref. #13660

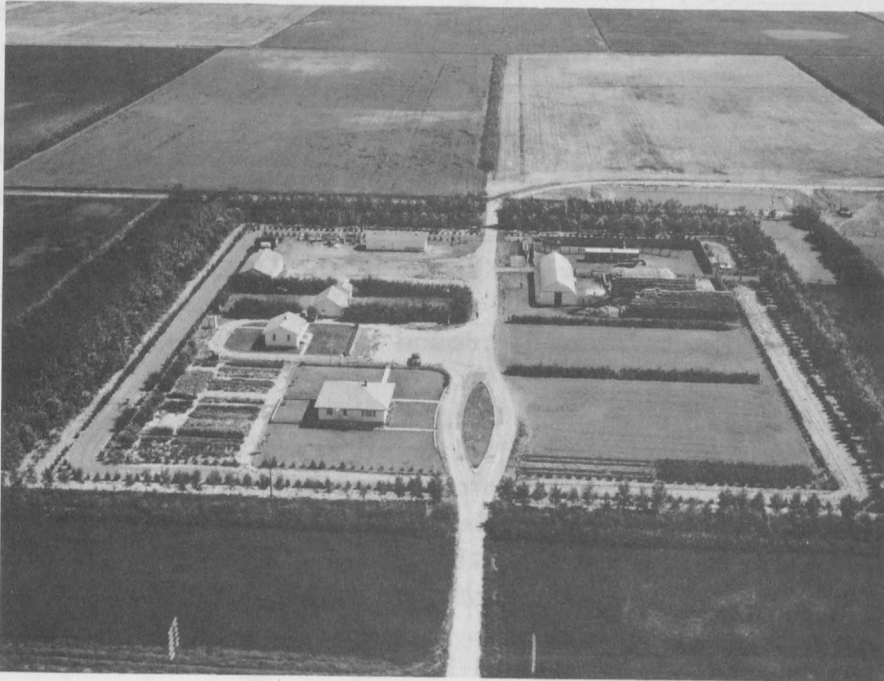
irrigation techniques and practices under prevailing soil and local climatic conditions, and to pre-determine problems which might arise under extensive irrigation development. The remainder of the farm consists of a 16-acre area operated by the Federal Experimental Farm at Swift Current. The detailed experimental work carried on provides valuable information on all phases of irrigation farming.

Water for both areas is delivered by pumping from the South Saskatchewan River. An approximate average of 12 inches of water was pumped over the whole farm acreage between May 15 and September 20, 1956. During the season, rainfall amounted to about 7 inches. During the summer an average of about 55 cattle were pastured on a 20-acre pasture area.

Irrigation is planned so that approximately 60% of the area is irrigated by gravity flow and 40% by the sprinkler method. A ten-year grain-grass rotation is planned for use on the land operated by P.F. R.A. A soil improvement program making use of commercial fertilizers, manure and legumes has resulted in progressive improvement in crop yields.

The relative production per acre of various crops produced on the farm in 1955 and 1956 were as follows:

<u>Crop</u>	<u>Yield per acre</u>	
	<u>1955</u>	<u>1956</u>
Hay	2.1 tons	3.4 tons
Oats	51 bus.	88 bus.
Barley	39 "	57 "
Wheat	32.8 bus.	48 "
Potatoes	415 "	407 bus.



Aerial view of pre-development farm at Outlook
Ref. #11579

In addition to experimental field work, 96 bulls were wintered on the farm for the P. F. R. A. Community Pasture Branch, on forage and grain produced by the farm.

A concrete root cellar with a capacity of approximately 300 tons of potatoes was constructed in 1956 in time to store the potato crop. Two fields were levelled to facilitate flood irrigation.

Buffalo Pound Lake Reservoir

The development of the Buffalo Pound Lake Reservoir was undertaken by P. F. R. A. at the request of the Federal Government. Through an arrangement with the Province of Saskatchewan, the Government of Canada has accepted the responsibility for maintaining the water level of Buffalo Pound Lake Reservoir. This lake is used principally as a source of urban water supply for the Cities of Regina

and Moose Jaw. The Buffalo Pound Lake Reservoir will become an integral part of the overall plan of the South Saskatchewan River Development, should this project be undertaken.

The development of this project, pending construction of the South Saskatchewan Dam, involves the pumping of water from the South Saskatchewan River at Elbow, a vertical distance of 107 feet, over a height of land which separates the South Saskatchewan River from the Qu' Appelle Valley. From this point it is delivered to the summit of Qu' Appelle River through a 12 mile canal. In addition, 48 miles of minor channel improvement work is required along the Qu' Appelle Valley between the end of the canal and Buffalo Pound Lake, to improve the flow characteristics of the Qu' Appelle River through that area.

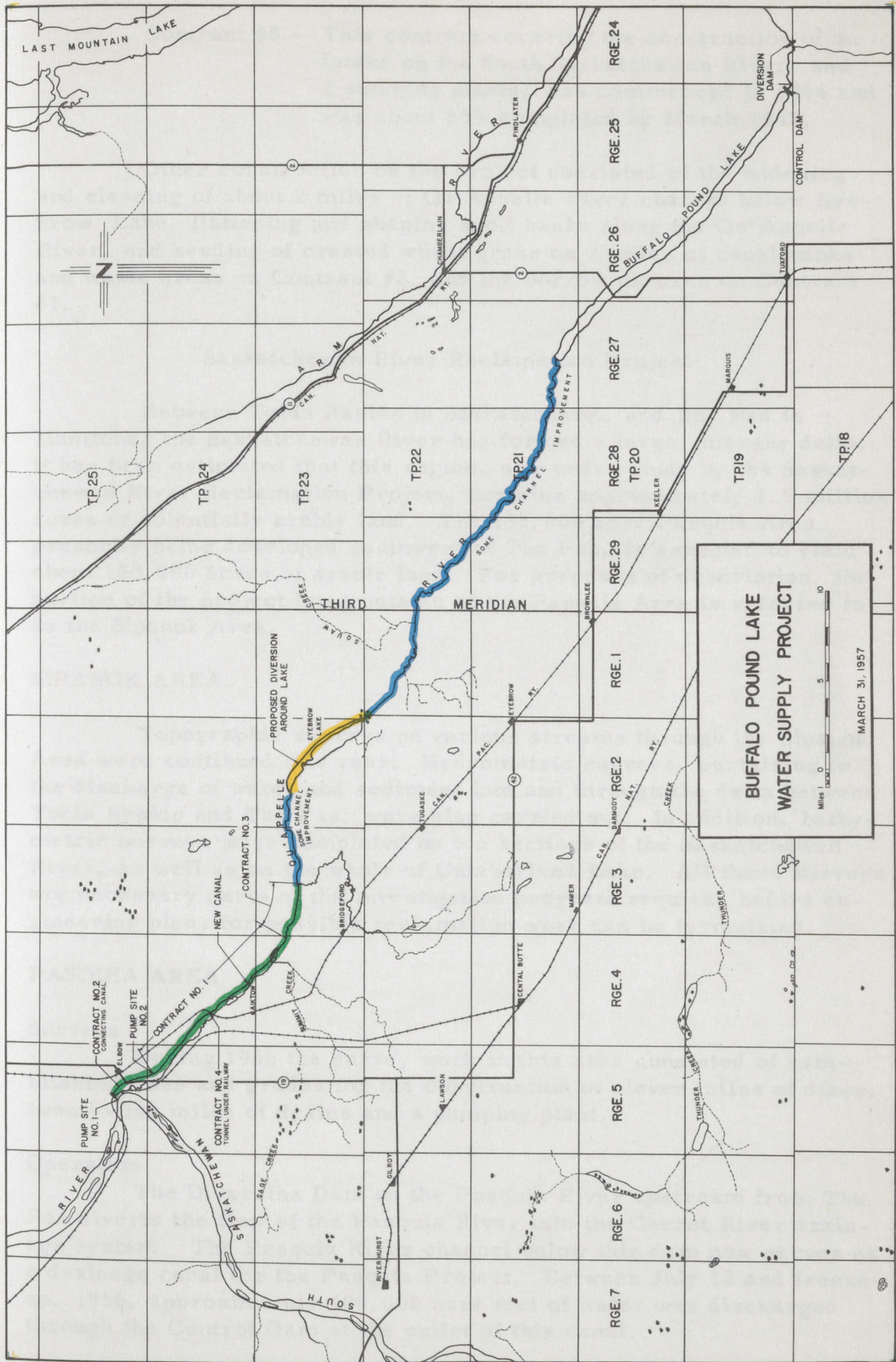
The land around Buffalo Pound Lake Reservoir was expropriated in the name of Canada up to an elevation that would suffice to protect Canada from claims for damages resulting from the higher water levels required to meet Canada's commitment, and also to enable the full use of local river flows of the Qu' Appelle River and Moose Jaw Creek. The controlled water levels has resulted in a surge of summer resort development around the Reservoir.

Surveys

A right-of-way survey was completed for the 9.7 miles of canal built under Contract #1 from Pumping Station #2 to the summit of the Qu' Appelle Valley. Profile and alignment surveys were conducted along a 6-mile stretch of this canal. The usual offset control lines and bench marks were maintained to guide construction on Contracts #2, 3, 4 and 5.

Construction

- Contract #1 - Construction of 9.7 miles of canal from Pumping Station #2 to the summit of the Qu' Appelle Valley was completed in October 1955.
- Contract #2 - Work on this contract covering the construction of 2.8 miles of canal and appurtenant works between Pumping Station #1 and #2 was about 90% completed in 1956.
- Contract #3 - This contract covering the construction of 3 miles of new channel and 2 concrete drop structures between the summit of the Qu' Appelle Valley and the point where Ridge Creek joins the Qu' Appelle Valley, was partially constructed in 1955, and about 90% completed at the cessation of work in 1956.
- Contract #4 - Progress on this contract covering the installation of a 7-foot culvert under the large C.P.R. earth fill, which crosses the Qu' Appelle Valley near Aitkow, was very slow and it eventually had to be completed by P.F.R.A. crews in March 1957.



**BUFFALO POUND LAKE
WATER SUPPLY PROJECT**

Miles 0 5 10
Scale

MARCH 31, 1957

Contract #5 - This contract covering the construction of an intake on the South Saskatchewan River, and 2 pumping plants, was commenced in 1956 and was about 55% completed by March 1957.

Other construction on the project consisted of the widening and cleaning of about 2 miles of Qu' Appelle River channel below Eye-brow Lake, flattening and shaping spoil banks along the Qu' Appelle River, and seeding of crested wheat grass on 2 miles of canal banks and waste areas on Contract #2, and the borrow pit area on Contract #1.

Saskatchewan River Reclamation Project

Between Tobin Rapids in Saskatchewan, and The Pas in Manitoba, the Saskatchewan River has formed a large, marshy delta. It has been estimated that this region, now under study by the Saskatchewan River Reclamation Project, contains approximately 1.5 million acres of potentially arable land. The 135,000 acre Pasquia Area, presently being developed southwest of The Pas, is expected to yield about 100,000 acres of arable land. For purposes of description, the portion of the project lying outside of the Pasquia Area is referred to as the Sipanok Area.

SIPANOK AREA

Topographic surveys on various streams through the Sipanok Area were continued this year. Hydrometric surveys, pertaining to the discharge of water and sediment into and through the delta between Tobin Rapids and The Pas, were also carried out. In addition, bathymetric surveys were completed on ten sections of the Saskatchewan River, as well as on the whole of Cumberland Lake. All these surveys are necessary parts of the investigation program required before engineering plans for possible reclamation work can be formulated.

PASQUIA AREA

Surveys

During 1956 the survey work in this area consisted of establishing lines and grades for the construction of eleven miles of dikes, twenty-five miles of drains and a pumping plant.

Operation

The Diversion Dam on the Pasquia River upstream from The Pas diverts the flow of the Pasquia River into the Carrot River drainage system. The Pasquia River channel below this dam now serves as a drainage canal for the Pasquia Project. Between July 12 and freeze-up, 1956, approximately 400,000 acre feet of water was discharged through the Control Dam at the outlet of this canal.



Mile 14 pumping station at high water level
Ref. #13404

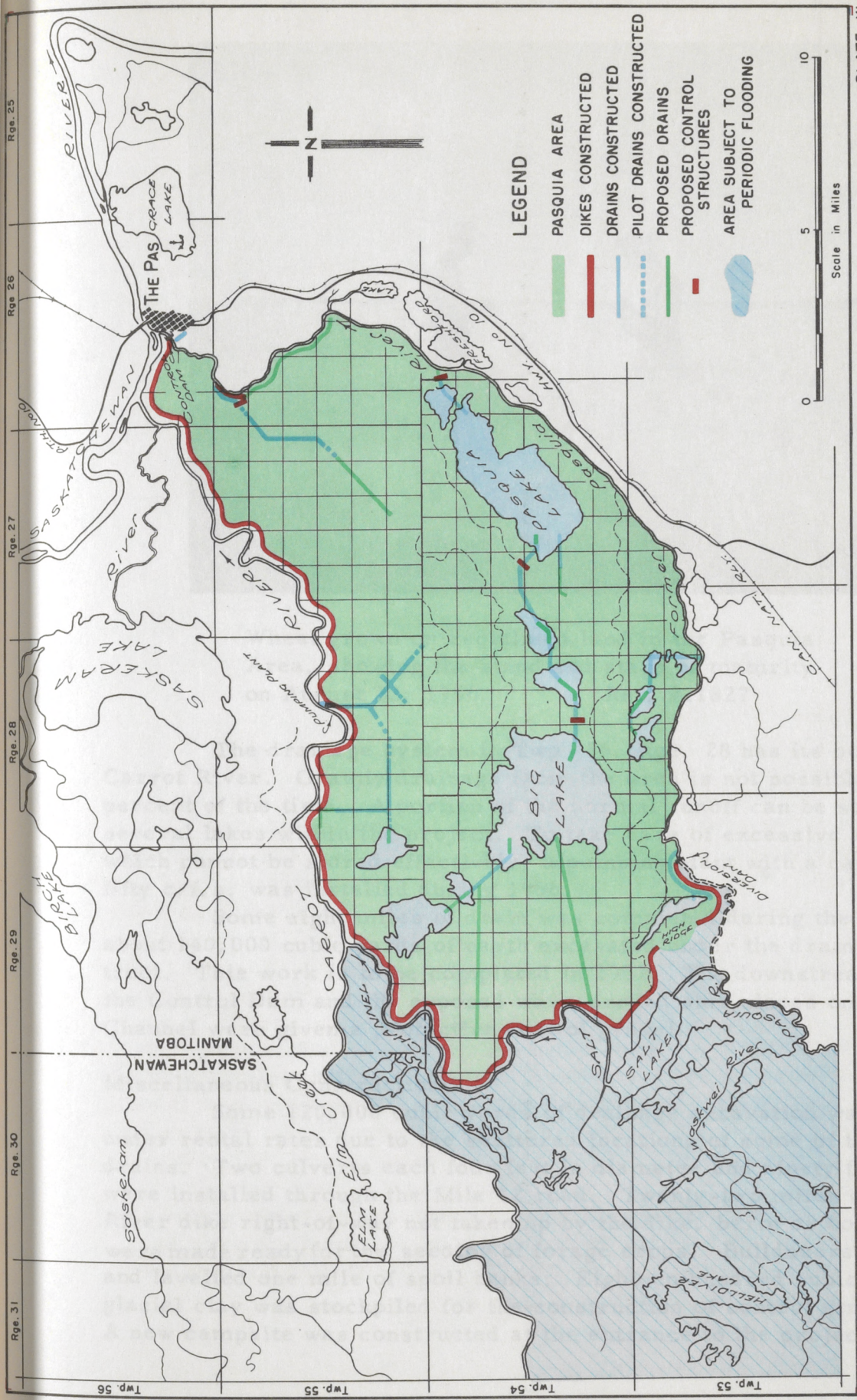
To prevent flooding of cultivated lands and to facilitate drain construction in Twps. 55, Rge. 28, two pumps were installed to discharge the runoff into the Carrot River.

Field Investigations

Water level gauges indicated the need for further improvement of the Salt Lake Diversion to permit a more effective draw-down of the reservoir created by the Pasquia Diversion Dam. Twelve piezometers were installed in 1956, and twelve more are to be installed in 1957 as other parts of the project become accessible. Between April and November 1956, 7.88" of precipitation were measured, compared with the 32-year average of 9.90". The frost-free period was 112 days. Sub-surface investigations to obtain information about the potential supply of domestic water from deep wells, and concerning the possibility of draining surface depressions into unsaturated substrata, were done at the request of the Manitoba Lands Branch.

Construction

Twenty-four miles of dike was constructed along the Carrot River from the Control Dam on the Pasquia River channel near The Pas to the Diversion Bridge over Salt Channel. This completed the construction of the main protection works.



DEPARTMENT OF AGRICULTURE - CANADA
P.F.R.A.

SASKATCHEWAN RIVER
RECLAMATION PROJECT

PASQUIA AREA

MARCH 31, 1957



Wheat grown on reclaimed land in the Pasquia Area, showing the stand and stage of maturity on August 22, 1956. Ref. #11827

The drainage system in Twp. 55, Rge. 28 has its outlet in the Carrot River. Gravity drainage from the area is not possible ninety percent of the time. A portion of the normal runoff can be stored in several lakes within the project. To take care of excessive runoff which cannot be stored effectively, a pumping plant with a capacity of fifty c.f.s. was installed during 1956.

Some eight miles of drain was completed during the year and about 140,000 cubic yards of earth excavated under the drain-dike contract. This work is to be completed in 1957. The downstream face of the Control Dam and the exposed wave-eroded side slopes on the Salt Channel were given a protective coat of gravel.

Miscellaneous Construction

Some 120,000 cubic yards of drainage excavation was done under rental rates due to the scattered locations of some of the smaller drains. Two culverts each four feet in diameter and ninety feet long were installed through the Mile 12 road. Twenty-two miles of Carrot River dike right-of-way not taken up by the dike, berm or borrow pit, were made ready for the seeding of forage crops. Bulldozers trimmed and levelled one mile of spoil banks. Eighteen hundred cubic yards of glacial clay was stockpiled for the construction of control structures. A new campsite was constructed at the entrance to the project. The

Indian Reserve borrow pit was levelled and grassed. A twenty-five hundred foot access road was constructed from the Carrot River road to the Mile 14 Pumping Plant.

Assiniboine River Project

Frequent flooding by the Assiniboine River in recent years has resulted in entire communities suffering damage to land, buildings and other property. In 1950, the responsibility for the diking and cut-off program along this river between Portage La Prairie and Winnipeg, was transferred from the Department of Public Works to the Department of Agriculture. For convenience, the watershed has been divided into the Upper Assiniboine, lying upstream of Portage La Prairie, and the Lower Assiniboine, extending downstream from Portage La Prairie to Headingly, Manitoba.

UPPER ASSINIBOINE RIVER

Surveys

Surveys were continued during 1956 to determine the feasibility of using headwater storage as a means of controlling flooding on the Lower Assiniboine River. Possible damsites on the upper reaches of the Assiniboine and its tributaries were located by field and office investigations.

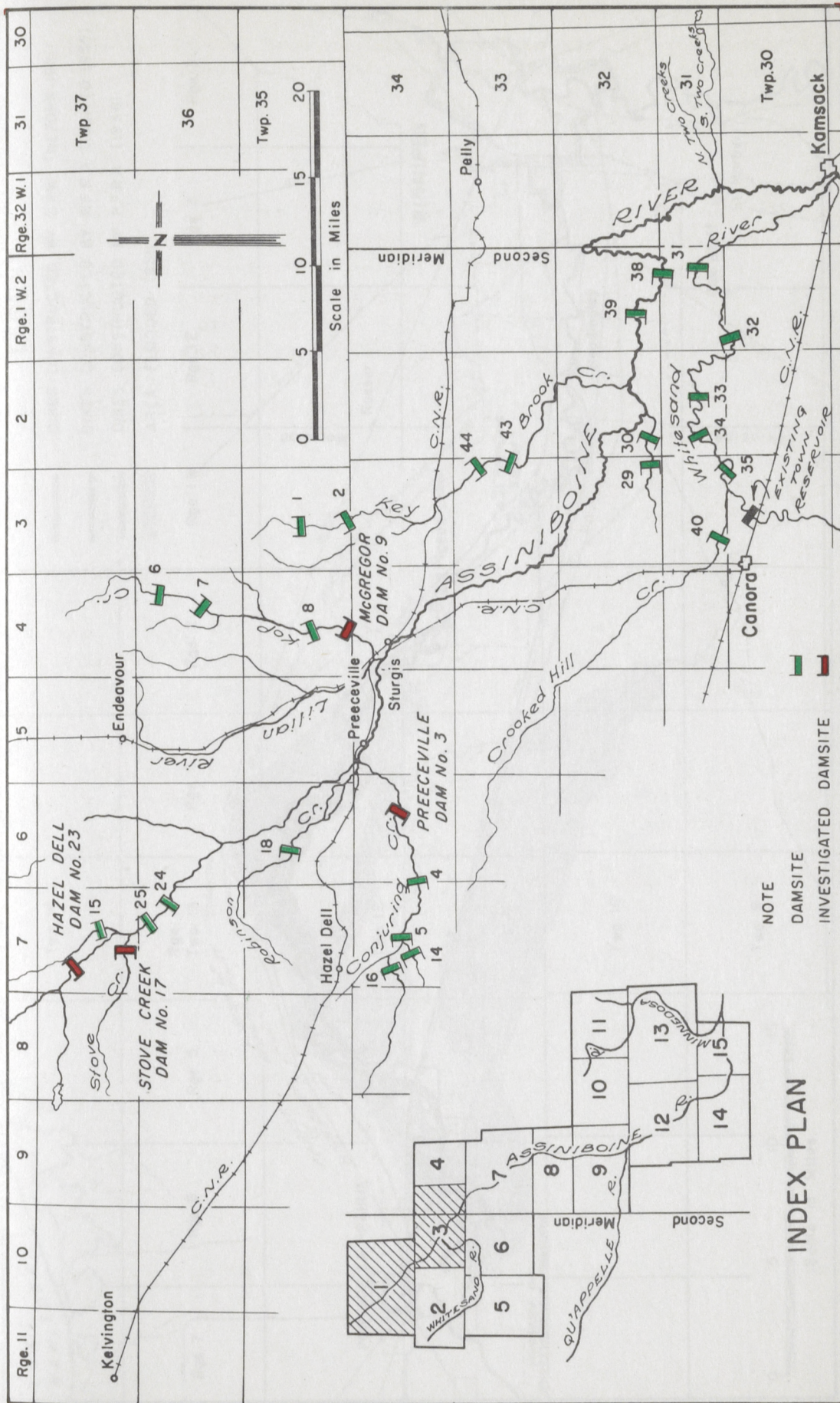
Construction

During 1956 the Miniota diking system on the Assiniboine River was completed. This six-mile length of dike, located on the north side of the river near Miniota, was designed to protect 1,200 acres of cultivated land from flood flows of 20,000 c.f.s. In addition, several small bank breaks were repaired in widely separated locations along the Assiniboine River from Virden, Man., to Kamsack, Sask.

LOWER ASSINIBOINE RIVER

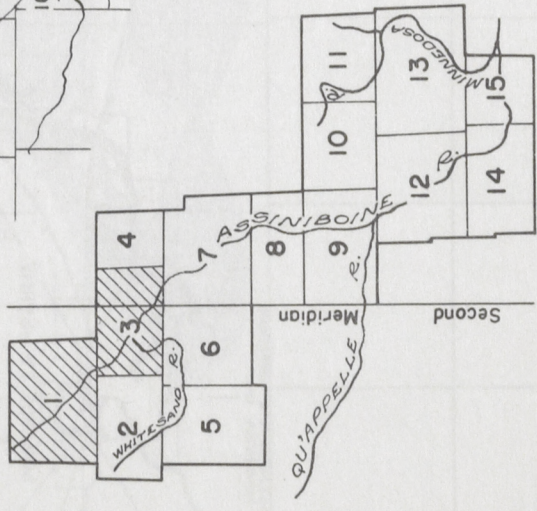
Surveys

Flood control measures along the Lower Assiniboine River consist of the construction and maintenance of an extensive diking system combined with river cutoffs. Prior to 1950 no effort had been made to establish a uniform design height for the dikes. During the four years from 1951 to 1954, an attempt was made to build dikes which would provide more or less uniform protection. Gauges were established to check the design height of the diking system in 1955 and 1956. Topographic surveys were completed for the design of two additional river cutoffs which are being considered for construction in 1957.



NOTE
 DAMSITE
 INVESTIGATED DAMSITE

INDEX PLAN



DEPARTMENT OF AGRICULTURE - CANADA
 P.F.R.A.

UPPER ASSINIBOINE RIVER PROJECT PROPOSED DAMSITE LOCATIONS

MARCH 31, 1957

SECTION 20, 1952

PROPOSED DAMS AND LEVEES ALONG THE ASSINIBOINE RIVER

In the Reserve, a new pit was leveled and graded. A twenty-five
hundred foot long road was constructed from the Carleton Place road
to the new pit.

Assiniboine River Project

Significant flooding by the Assiniboine River in recent years
has caused the Federal Government to develop a comprehensive plan
and other projects. In 1950, the responsibility for the design and con-
struction of the project along this river between Portage la Prairie and Winnipeg
was transferred from the Department of Public Works to the Depart-
ment of Agriculture. For convenience, the project has been divided
into the Upper Assiniboine River upstream of Portage la Prairie, and
the Lower Assiniboine River, extending downstream from Portage la Prairie
to Winnipeg.

UPPER ASSINIBOINE RIVER

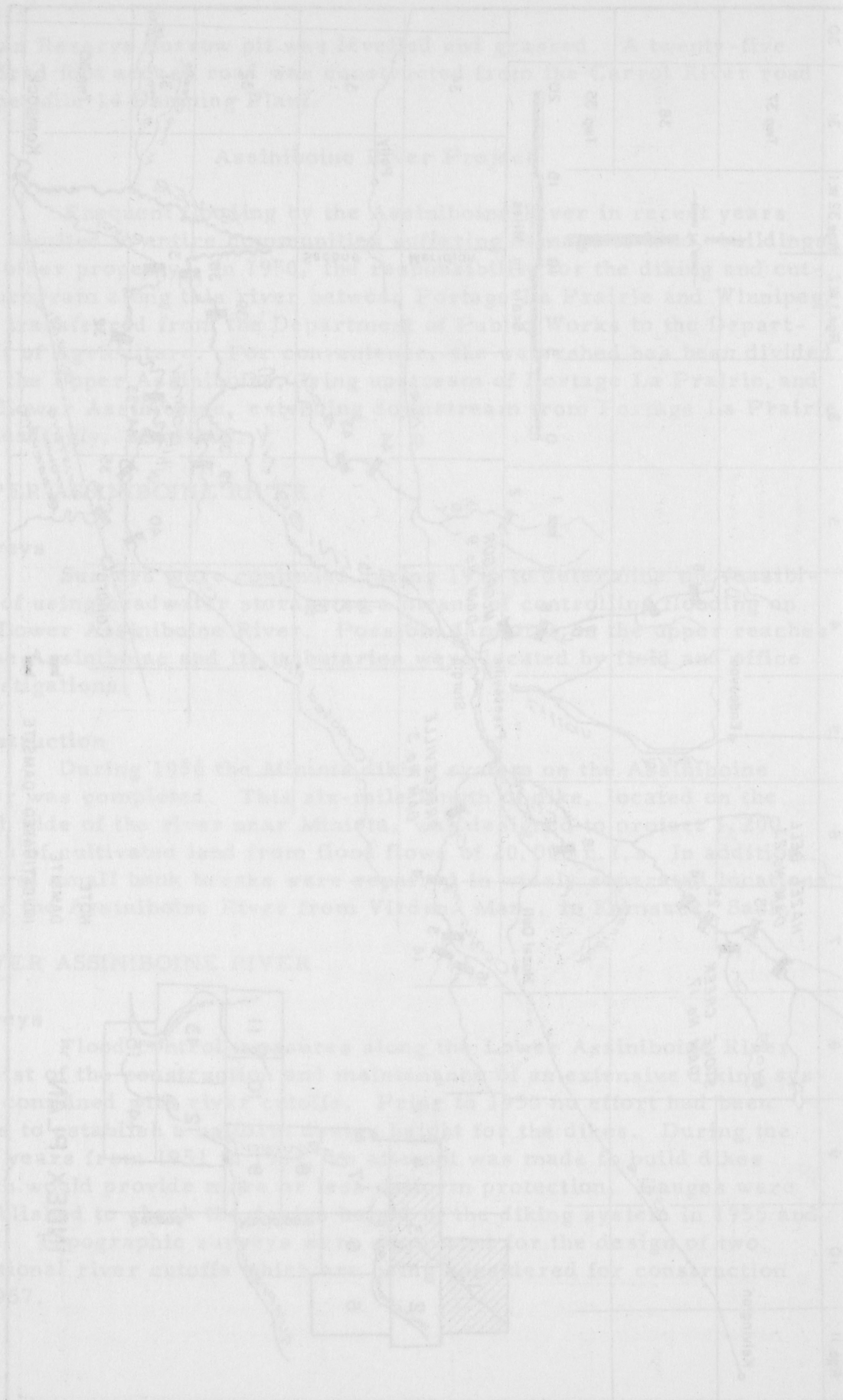
Surveys were conducted in 1951 to determine the possi-
bility of using water storage and control for controlling flooding up
the lower Assiniboine River. Possibilities for the upper reaches
of the river and its tributaries were indicated by field and office
investigations.

During 1952 the Manitoba River Survey on the Assiniboine
River was completed. This six-mile survey, located on the
north side of the river near Morden, was designed to protect 2,000
acres of cultivated land from flood flow of 20,000 c.f.s. In addition
small bank breaks were reported in several places along
the Assiniboine River from Virden, Man., to Morden, Man.

LOWER ASSINIBOINE RIVER

Surveys

Flood damage reports along the Lower Assiniboine River
consist of the construction and maintenance of an extensive diking sys-
tem confined to the river itself. Prior to 1950 no effort had been
made to establish a definite water height for the dikes. During the
four years from 1951 to 1954 an effort was made to build dikes
which would provide a level of water protection. Gauges were
established to show the water height of the diking system in 1955 and
1956. Topographic surveys were made for the design of two
additional river outfalls which are being considered for construction
in 1957.



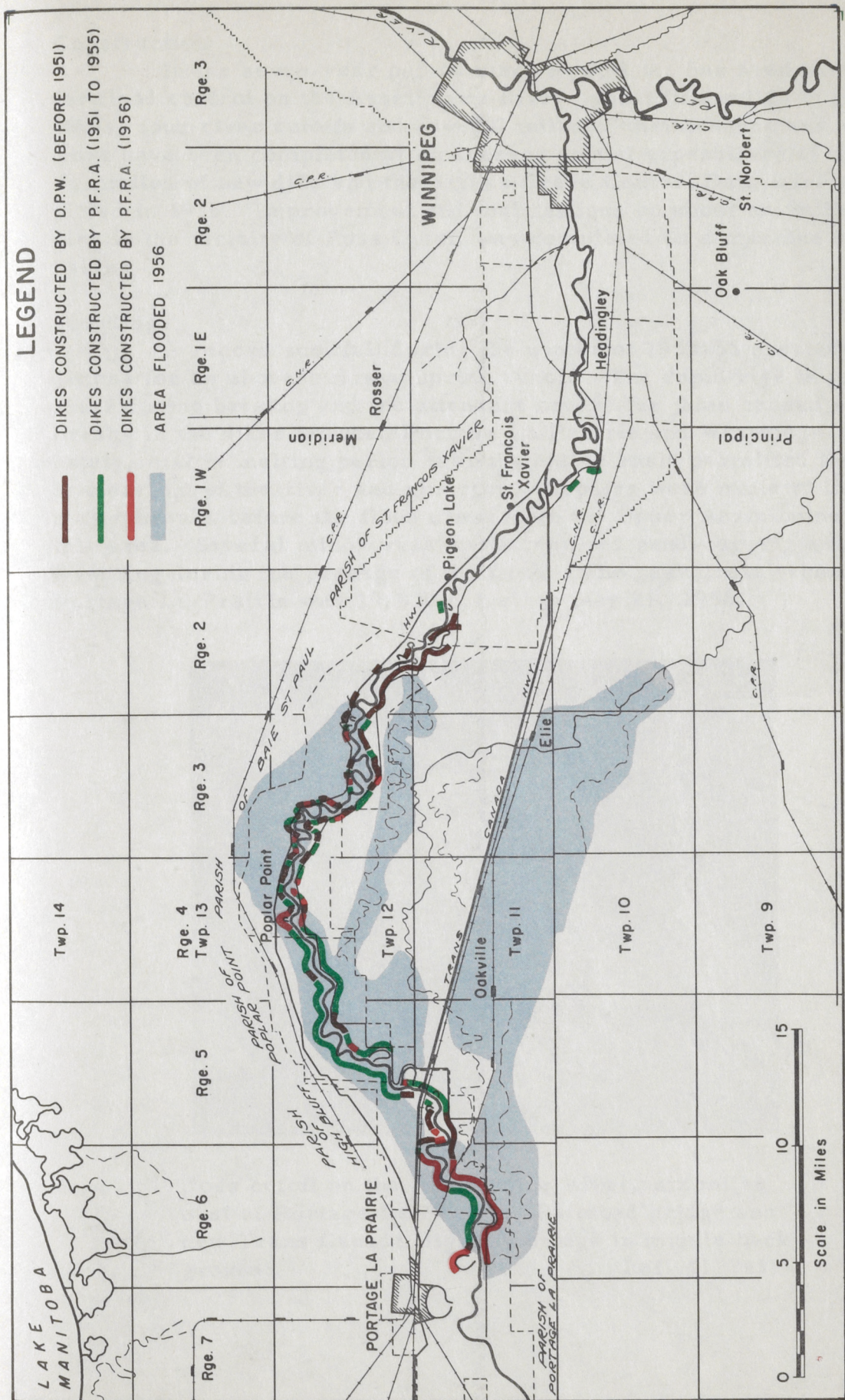


PLATE XIII

DEPARTMENT OF AGRICULTURE - CANADA
P.F.R.A.

LOWER ASSINIBOINE RIVER PROJECT DIKING AND FLOODED AREA 1956

MARCH 31, 1957

THE ARIZONA HISTORICAL SOCIETY
PUBLISHED BY THE ARIZONA HISTORICAL SOCIETY
TUCSON, ARIZONA

Volume 1, Number 1, 1924



Construction

In the seven-year period since P. F. R. A. has been responsible for flood control on the Assiniboine River, about fifty miles of new dikes, four river cutoffs and several miles of maintenance and repair work have been completed at an average annual expenditure of \$90,000.00. Ten miles of new dike and the Sayers Creek Control Dam were completed in 1956. Improvement and maintenance on about ten miles of dike in the vicinity of Ross Cutoff was completed on a machine rental basis.

Flooding

A record snowfall during the winter of 1955-56 created conditions for an above-average spring runoff. The rapid rise in the river during breakup and the attendant severe ice jams caused several breaks in the dikes between Portage La Prairie and Winnipeg. Fortunately, a slow melting period over the entire basin permitted the ice to clear out of the river and emergency repairs were made to the five major breaks before the flood crest from the Upper Assiniboine reached this area. Several minor weak spots required sand-bagging and re-inforcing during the passage of the flood. The peak crest recorded at Portage La Prairie was 19,000 c.f.s. on May 21, 1956.



Ross cutoff on the Assiniboine River, six miles east of Portage La Prairie. Railroad bridge and new Trans Canada Highway bridge in middle background. Ref. #12743

North West Escarpment Reclamation Project

Under an Agreement between the Province of Manitoba and the Government of Canada, P. F. R. A. has carried out a program of investigation and construction to relieve the flood and erosion problems caused by the streams and rivers flowing off the northern and eastern slopes of the Riding and Duck Mountains.

Surveys

No major surveys directly connected with the project were carried on during 1956. Apart from the required construction surveys, three miles of topographical survey was completed on the North Pine River.

Construction

A fairly extensive program of stream bank protection and flood damage repair was undertaken this year. The bulk of this work consisted of placing rock riprap in eroded banks, on flood-damaged weirs, and adjacent to undermined bridge and culvert installations on the Edwards and Mink Creeks and on the Wilson River.

Considerable damage was caused to the Edwards Creek drain by a flash flood which occurred in June. Three weirs and nine bridges on the drain required attention as a result of the flood. In an attempt to prevent flood-borne debris from entering the main drain in future, a timber diversion structure was built in the silting basin above the main weir. Other improvements on the Edwards Creek included repairing structural damage to the bridges, widening and protecting the natural channel above the silting basin, improving local drainage adjacent to the diking system, and installing steam pipes in two culverts under the floodway dikes.

Rock riprap protection was placed on ten banks throughout the lower fifteen miles of the Wilson River, one bridge was protected and a two mile length of borrow pit drain was dug at the downstream end of the system.

Three eroding banks on Mink Creek Drain were riprapped at the close of the construction season.

In preparation for control work proposed for 1957, two separate right-of-way clearing jobs were completed during the winter months. These were on the Mineral Creek and Fishing River, where six and seven miles respectively of hand clearing, 100 feet in width were completed.

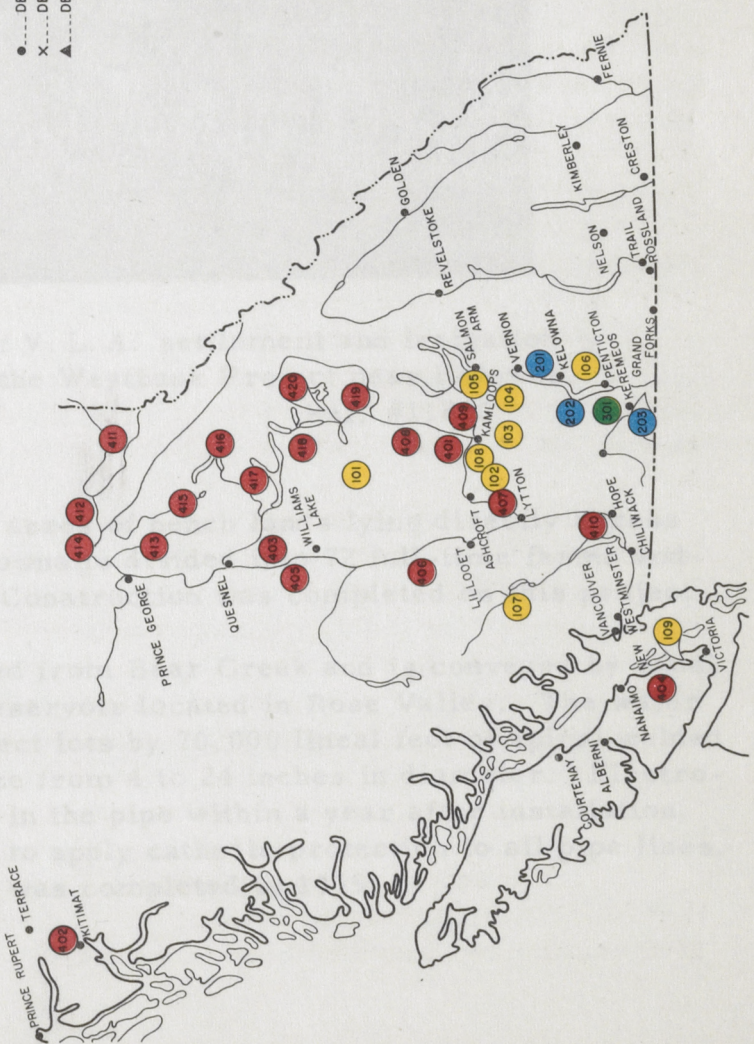
British Columbia Projects

The activities of the Prairie Farm Rehabilitation Administration in British Columbia during 1956-57 have involved the supervision of operation and improvement on projects already constructed for the

- 101 CARIBOO WILDLIFE PROJECT NO.2
- 102 TRANQUILLE FARM
- 103 JOHNSON - WESTERN CANADA RANCHING NO.1
- 104 JOHNSON - WESTERN CANADA RANCHING NO.2
- 105 CHASE FLATS
- 106 PENTICTON WEST BENCH
- 107 LILLOET VALLEY RECLAMATION
- 108 MISSION FLATS
- 109 SAANICHTON EXPERIMENTAL FARM
- 201 BANKHEAD
- 202 WESTBANK
- 203 CAWSTON BENCHES
- 301 PENTICTON WEST BENCH EXTENSION
- 401 B.C. FRUITLANDS IRRIGATION DISTRICT
- 402 KITIMAT
- 403 CUISSON CREEK
- 404 COWICHAN

- 405 QUESNEL TO WILLIAMS LAKE
- 406 WILLIAMS LAKE TO LYTTON
- 407 LYTTON TO KAMLOOPS
- 408 KAMLOOPS TO CLEARWATER
- 409 KAMLOOPS TO CHASE
- 410 HARRISON LAKE FLOOD CONTROL
- 411 UPPER Mcgregor - FLOOD CONTROL and POWER
- 412 LOWER Mcgregor - FLOOD CONTROL and POWER
- 413 WILLOW RIVER - FLOOD CONTROL and POWER
- 414 GISCOME CANYON - FLOOD CONTROL and POWER
- 415 BOWRON LAKE - FLOOD CONTROL and POWER
- 416 ISAAC RIVER - FLOOD CONTROL and POWER
- 417 CARIBOO RIVER - FLOOD CONTROL and POWER
- 418 HOBSON LAKE - FLOOD CONTROL and POWER
- 419 CLEARWATER RIVER - FLOOD CONTROL and POWER
- 420 MURTLE RIVER - FLOOD CONTROL and POWER

PRINCE RUPERT TERRACE

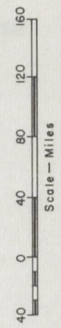


-DENOTES PROJECTS UNDERTAKEN FOR V.L.A.
- X.....DENOTES PROJECTS UNDERTAKEN FOR PROVINCIAL GOVERNMENT.
- ▲.....DENOTES PROJECTS BEING INVESTIGATED FOR FRASER RIVER BOARD.

PROJECT STATUS

- 100...CONSTRUCTION COMPLETED.
- 200...CONSTRUCTION COMPLETED, UNDER SUPERVISORY OPERATION AND IMPROVEMENT.
- 300...PROJECTS UNDER CONSTRUCTION.
- 400...PROJECTS UNDER CURRENT INVESTIGATION.

1956-57 INDEX MAP
SHOWING LOCATION OF
LAND RECLAMATION AND IRRIGATION PROJECTS
IN
BRITISH COLUMBIA
MARCH 31, 1957



North West Escarpment Reclamation Project

Under an Agreement between the Province of Manitoba and the Government of Canada, P. F. R. A. has carried out a program of investigation and construction to relieve the flood and erosion problems caused by the streams and rivers flowing off the northern and eastern slopes of the Riding and Duck Mountains.

The major surveys directly connected with the project were carried out during 1956-57 from the required topographic surveys. This type of topographic survey was completed for the North Pine River.

Construction

A fairly extensive program of stream channelization and flood damage repair was carried out. This work consisted of placing rock in the stream bed to create a stable channel, and in some cases building bridges and culverts to carry the water over the stream bed.

Considerable damage was caused to the bridges by a high flood which occurred in June. Three bridges and one culvert on the stream required attention as a result of the flood. In an attempt to prevent flood-borne debris from entering the main drain in future, a large debris structure was built in the silt basin above the main weir. Other improvements on the Edwards Creek included repairing structural damage to the bridges, widening and protecting the main channel above the silt basin, improving local drainage adjacent to the main system, and installing steam pipes or two culverts under the highway.

The main drain system was placed on ten banks throughout the lower part of the Edwards River. One bridge was protected and a two mile section of the main drain was dug at the downstream end of the system.

The existing banks of the main drain were improved at the top of the main drain.

In preparation for the main drain proposed for the main drain, the main drain was cleared and the main drain was completed. These were the main drain and the main drain. These were the main drain and the main drain. These were the main drain and the main drain.

British Columbia Projects

The main drain of the Prairie Farm Rehabilitation Administration in British Columbia, 1956-57, have involved the supervision of operation and improvement of the main drain already constructed for the

Veterans' Land Act, the development to construction stage of one new Veterans' Land Act project, and the investigation of five special projects - two for Veterans' Land Act, two sponsored jointly with the Government of British Columbia, and one for the Department of Indian Affairs. In addition, damsite surveys and geological investigations were continued in connection with storage and power proposals for the Fraser River Board.

PROJECT OPERATION AND IMPROVEMENT



Progress shot of V. L. A. settlement and irrigation development on the Westbank Project near Kelowna, B. C. Ref. #11820

Westbank

Eleven Hundred acres of bench lands lying directly across Okanagan Lake from Kelowna is divided into 72 full-time farms and 53 small-holding units. Construction was completed on this project in 1950.

Water is obtained from Bear Creek and is conveyed by canal and flume to a storage reservoir located in Rose Valley. The water is distributed to the project lots by 70,000 lineal feet of spiral welded steel pipe, varying in size from 4 to 24 inches in diameter. Electrolytic corrosion occurred in the pipe within a year after installation, and it became necessary to apply cathodic protection to all pipe lines. This protection program was completed in 1955.

Bankhead

The Bankhead project, constructed in 1951 to provide sprinkler irrigation by pumping from Mill Creek to 58 small holdings of one acre in size, has been operated successfully since completion.

Consideration is now being given to the feasibility of supplying water to an adjoining 75 acres of orchard land. This would enhance the district's operational revenue. Engineering assistance will be provided in the preparation of a preliminary report on the estimated cost and power required for this proposed extension.

Cawston Benches

The Cawston Benches, consisting of 624 acres, subdivided into 52 full-time farms, are situated on the Similkameen River bench lands three miles south of Keremeos. Water from the river is supplied by 4 deep-well turbine pumps with a total capacity of 5100 U. S. gallons per minute.

As a result of the heavy load of silt carried by the Similkameen River during high water stage, a settling basin was constructed north of the pumphouse several years ago. During the past year repairs have been carried out to ensure water being diverted through this settling basin during high water stage. It is planned during the 1957 irrigation season to conduct pumping tests along the base of the bench adjacent to the main canal, to determine the feasibility of obtaining a ground water supply from this area rather than the river.

PROJECT CONSTRUCTION

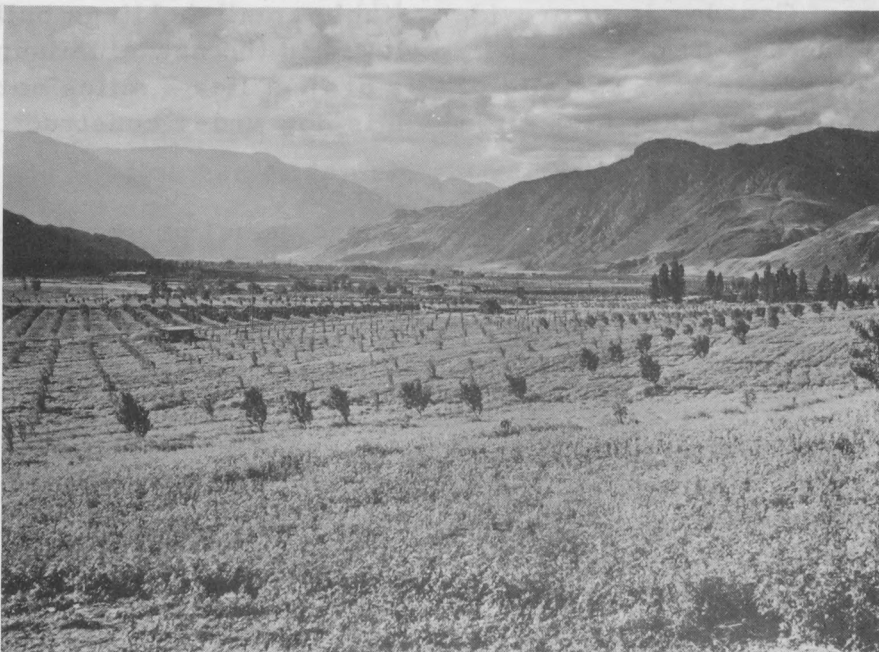
Penticton West Bench Extension

This project, situated west of the city of Penticton, consists of 205 acres divided into 94 small holdings. Water for domestic and irrigation use is pumped from the Okanagan River by means of 3 vertical turbine pumps with motors of 40, 50 and 75 horsepower, capable of delivering 1100 U. S. gallons per minute against a 40-foot head.

Completed in May 1954 this project was fully settled by September 1955. A request that new land adjacent to the original project be developed, was submitted by Veterans' Land Act officials. Location surveys, plans and reports were completed, tenders were let, and construction was under way by the end of the 1956-57 fiscal year. This extension requires a 150-horsepower pump to be added to the pumping plant, which will make available an additional 84 small holdings to the Penticton West Bench project.



Cawston Benches, south of Keremeos, B.C. before irrigation was established in this area. Ref. #1173



Comparison picture of the same area showing V. L. A. settlement and orchard development as a result of irrigation. Ref. #13330

INVESTIGATIONS

Veterans' Land Act

Two projects were proposed for study by Veterans' Land Act. The B. C. Fruitlands Irrigation District, an area of some 2900 acres northwest of the village of North Kamloops, has been supplied by gravity water from Jamieson Creek with supplementary water pumped from the North Thompson River. The system has been in operation for over forty years and must now be replaced if irrigation is to continue in that district.

A preliminary survey and report for a closed pipe pressure system supplied by pumping from the North and South Thompson Rivers was prepared by P. F. R. A. in 1952, but no action was taken on this proposal. During the past year, P. F. R. A. has given engineering assistance in the preparation of plans for the gradual renewal and replacement of the present gravity system with a full pressure system to supply domestic as well as irrigation water from the North and South Thompson Rivers.

The second investigation completed during 1956 was of a proposed small-holdings project adjacent to the city of Kitimat. The preliminary survey plan and report of subdivisions, road requirements, drainage and clearing problems, and a pumping station and pipe distribution system were completed this year. This project, based on current negotiations between the Veterans' Land Act and the Aluminum Company of Canada, is to provide suitable small-holdings building sites for the benefit of Veterans employed in the new aluminum smelter operation at Kitimat. The site of this project lies 2 miles north of Kitimat on the Terrace highway which is now under construction.

Provincial Government of British Columbia

The Cuisson Creek project, a provincial proposal for the irrigation of 2680 acres of river benches along the Fraser River 20 miles south of Quesnel, was investigated during 1956. Water would be diverted from Cuisson Creek and delivered in closed conduits with sufficient head being available for sprinkler irrigation.

A preliminary survey and report was completed but held in abeyance, pending clarification of water resources. Further records have now been obtained on the flows of this stream and a field inspection has been made to evaluate the proposed storage site. At the close of the year this project was under study by the Water Rights Branch of the Government of British Columbia.

The other investigation undertaken for the provincial government was in an extensive area of 35,000 to 45,000 acres adjacent to Duncan on Vancouver Island which could be irrigated from the Cowichan River, with storage in Cowichan Lake. No work has been done on this project to date except the compilation of statistical data on land ownership and water resources.

Department of Indian Affairs

The Department of Indian Affairs requested a reconnaissance report on flood control of the Cowichan and Kobsilah Rivers which traverse the largest Reserve on Vancouver Island. A full-scale topographic and hydrographic investigation is now pending as a result of this reconnaissance report.

Fraser River Board

The Fraser River Board, a joint agency of the Provincial and Federal Governments, is charged with preparing a report on power potential and flood control of the entire Fraser River system.

For the past four years, P. F. R. A. has provided engineering services for compilation of topographic maps, and more detailed investigations into the site areas of dams required for power development and flood control.

During the past year, the P. F. R. A. carried out area surveys of eight damsites on the Murtle River, a tributary of the Clearwater River; on the Cariboo River (or North Fork of the Quesnel River) east of Quesnel, B.C.; and on the Willow River twenty miles east of Prince George.

In addition to field survey, Office Air Photo Appreciations of forty-two damsites were carried out by the Air Photo Analysis and Geological Engineering Division of P. F. R. A.

To indicate the scope of the work carried on since 1950 for the Fraser River Board the following summary has been compiled:-

1. Number of power sites surveyed	- 19
2. Potential horsepower at these sites	- 635,000
3. Number of damsites - reconnaissance and photo appreciation only	- 32
4. Number of damsites - storage only surveyed	- 4
5. Total water storage involved in all sites	- 8,300,000 ac. ft.
6. Reconnaissance of irrigation potential by pumping	- 66,893 acres

ENGINEERING SERVICES

For many of its projects P.F.R.A. requires basic information, much of which involves highly specialized knowledge and training. To supply this information, which is seldom available from outside sources, the organization has set up a number of Divisions under the general heading of Engineering Services.

Hydrology Division

This Division was established for the purpose of providing basic hydrologic information for the planning, design and operation of P.F.R.A. projects. In general, the studies undertaken may be classified under three headings: flood potential determinations, water supply and utilization studies for specific projects, and water supply and utilization studies on broad watershed bases. In addition, the Division acts as the Secretariat for the Prairie Provinces Water Board for which it undertakes special studies, provides information for the Canadian section of certain international engineering boards established under the International Joint Commission, and does minor studies of varying character for other Branches and Divisions of P.F.R.A.

During the 1956-57 fiscal year, the flooding potential at various damsites was studied and reported upon. These included the McKinnon Weir, Pothole Dam, Boisevain Dam and at the proposed Deloraine, Sarnia, Rivers and Fallen Timber damsites. In addition, reports on floods prepared by other Divisions of P.F.R.A. were reviewed with particular attention being given to the Waterton and Whitemud River projects.

Water supply studies were undertaken for a number of specific proposed projects including the Radville, Kerrobert, Fallen Timber and Upper Assiniboine projects.

Studies on a general watershed basis were continued during the year in order to present an overall picture of future water supply and utilization in selected drainage basins. Studies of this character which were undertaken this year are as follows:

Hydrology Report #15 - "Water Supply and Utilization in the Ross Creek Basin", November 1956 (completed)

Hydrology Report #16 - "Hydrology of Carrot River Floods", August 1956 (completed)

Hydrology Report #17 - "Water Supply and Utilization in the Wascana Creek Basin" (nearly complete)

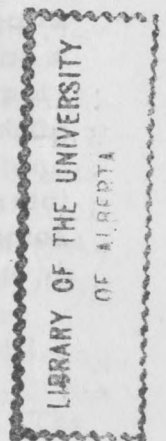
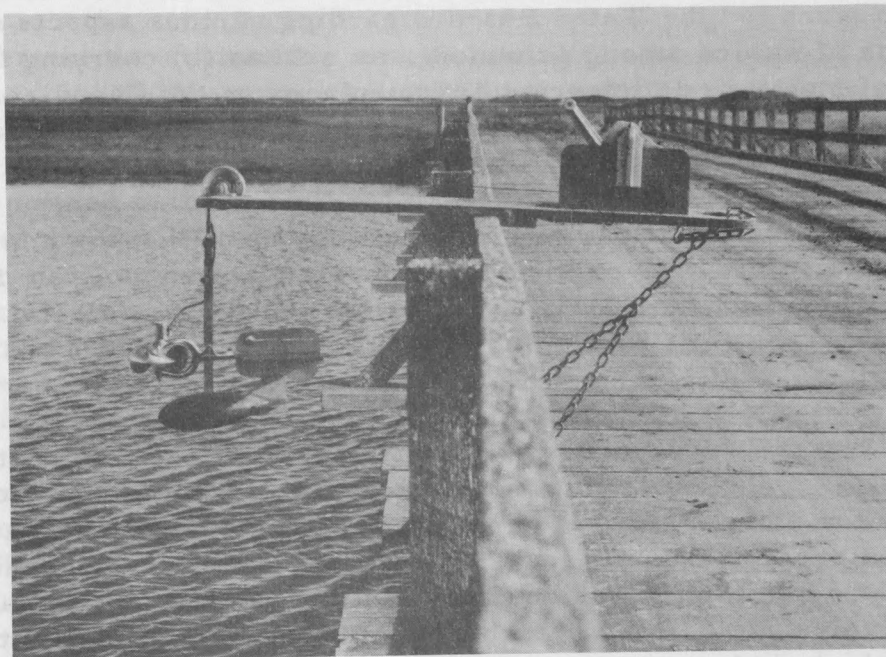
Hydrology Report #18 - "Qu' Appelle Basin Floods of 1956",
October 1956 (completed)

Hydrology Report #19 - "Use of Water in the Qu' Appelle
Watershed", March 1956 (completed)

Hydrology Report #25 - "Preliminary Estimates of Flood
Frequencies in the Riding Mountain
Area", November 1956 (completed)

Of particular interest is the series of eight reports covering the Qu' Appelle River Watershed which will be completed in 1957. These reports will deal with various phases of the supply, utilization and control of water resources in this basin. Within this series, Hydrology Reports Nos. 12, 18 and 19 have been completed while Reports Nos. 20 to 24 inclusive are well under way.

Another study now initiated deals with the Pipestone Creek Watershed and this should be completed during the following year.



Stream-flow measuring equipment being used to
check unusual flood conditions in the Quill Lake
area. (Saskatchewan) Ref. #13523

During the year this Division also (a) advised on international hydrometric data collection on the eastern tributaries of the Milk River, (b) advised on the measurement of irrigation water and operating procedures on the irrigation projects in the Cypress Hills, (c) co-operated with the Swift Current Regional Office in inspecting private projects in

the Cypress Hills on behalf of the Provincial Government, (d) co-operated with the Swift Current Office in organizing information necessary for the Saskatchewan Water Rights Office with respect to the irrigation projects in the Cypress Hills (e) advised the Kamloops Regional Office on certain hydrology problems, (f) advised the Saskatchewan Civil Defence Office, Saskatchewan Water Rights Office, the City of Regina and various Rural Municipalities on 1956 spring flood hazards and forecasting, (g) supplied basic data to the Alberta Water Resources Office, (h) co-operated with the Swift Current Experimental Farm on the operation of the Davin Hydrology Research Station and (i) also carried out snow surveys to forecast spring runoff volume in connection with the operation of Buffalo Pound Lake in the Qu' Appelle Valley. In addition, the Division was represented on the P. F. R. A. Pasture Improvement Committee and initiated certain basic hydrologic studies pertinent to the development of standard hydrologic estimating procedures.

Studies of various character were supplied throughout the year to the Prairie Provinces Water Board. In particular, (a) close co-operation was given to the Federal Agricultural Economics Division and their work for the Water Board regarding various aspects of the allocation of waters among provinces, as well as (b) carrying forward a study of moisture deficiencies and surpluses on the Canadian Prairies; this work is being undertaken in detail by a member of the staff of the Division of Geography, University of Alberta.

Studies were also undertaken for the Canadian Section of the international Souris-Red Rivers Engineering Board for the International Joint Commission, with particular emphasis given to possible future development within the Souris River Basin.

Soil Mechanics and Materials Division

The Soil Mechanics and Materials Division carries out studies and provides technical advice in connection with foundations, soils, concrete and other materials associated with earth dam and water development projects. In the investigation stages this involves field exploration, sampling and laboratory testing. Based on this data, design studies are carried out which provide the basic information for the final design of structures. In the construction stage further detailed exploration is required along with construction control, additional testing, and the installation of special test apparatus. With the project in service the test apparatus is utilized to indicate the performance of the structures and to ensure that seepage or deformation does not exceed tolerable limits.

During the year investigational work was carried out at 62 sites. Major projects included: the completion of investigations at Boundary Dam, exploration in the Assiniboine River Basin, further work on the Red Deer Project, and the completion of exploratory work

at Waterton Damsite No. 3. In total 65,000 feet of test holes were drilled and 12,000 samples were taken with drilling and sampling equipment of the Division.

Projects in the construction stage for which the Soil Mechanics and Materials Division provided construction control and field testing services included: the Canal on the Buffalo Pound Lake Water Supply Project, Boundary Dam, LaFleche Dam, Hugonard Dam, Adair Creek Dam, East Ridge Dam, North Ridge Dam, the Belly River to St. Mary Canal on the St. Mary Project, miscellaneous structures in Saskatchewan and on the Bow River Project in Alberta, and the Rock Lake Dam in the Eastern Irrigation District.

The Boundary Dam, a Saskatchewan Power Corporation Project for which P. F. R. A. is providing complete engineering services on a reimbursable basis, is of special interest from a soil mechanics standpoint due to the many difficult problems involved. This water storage project, planned by P. F. R. A., consists of an earth dam 90' in height. It is located on Long Creek near Estevan in southeastern Saskatchewan and is being built for the purpose of providing cooling water for a steam power plant. Two difficult problems associated with this dam are the cut-off required to intercept seepage through pervious coal layers in the abutments, and the stability of a portion of the embankment located above an area containing soft plastic clay in the foundation. From exploration elsewhere in the area, it was expected that the coal layers would be very pervious. Consequently, pressure tests and other water tests were carried out to verify the degree of perviousness. As a means of solving this problem, it became clear that an unusually deep cut-off would have to be used to intercept the coal layers immediately adjacent to the dam. In addition, drainage tunnels and horizontal drains and relief wells are being used to relieve pressure downstream from the embankment. Piezometers and standpipes will be installed to determine the effectiveness of these devices.

Three methods were considered to improve the stability. The first involved removal of the unstable material from the building area which would delay construction and result in a substantial increase in cost. The second method involved what is called "stage construction" or in other words, adding the embankment load over a period of several seasons. However, this would also delay completion of the project. The third method was to accelerate the settlement and gain in strength of the foundation by the use of vertical and sand drains to permit escape of water squeezed from the soil as it was loaded. As time was a very important consideration in connection with this dam, the last method was adopted in combination with the stage method of construction. Even with these two expedients, the stability of the structure may be no more than adequate based on predictions from laboratory tests. Therefore, very extensive test apparatus to measure settlement, deformation, and water pressures, have been installed and construction is being proceeded with on a design as you go basis to ensure that a safe and yet as economical a structure as possible, will be built.



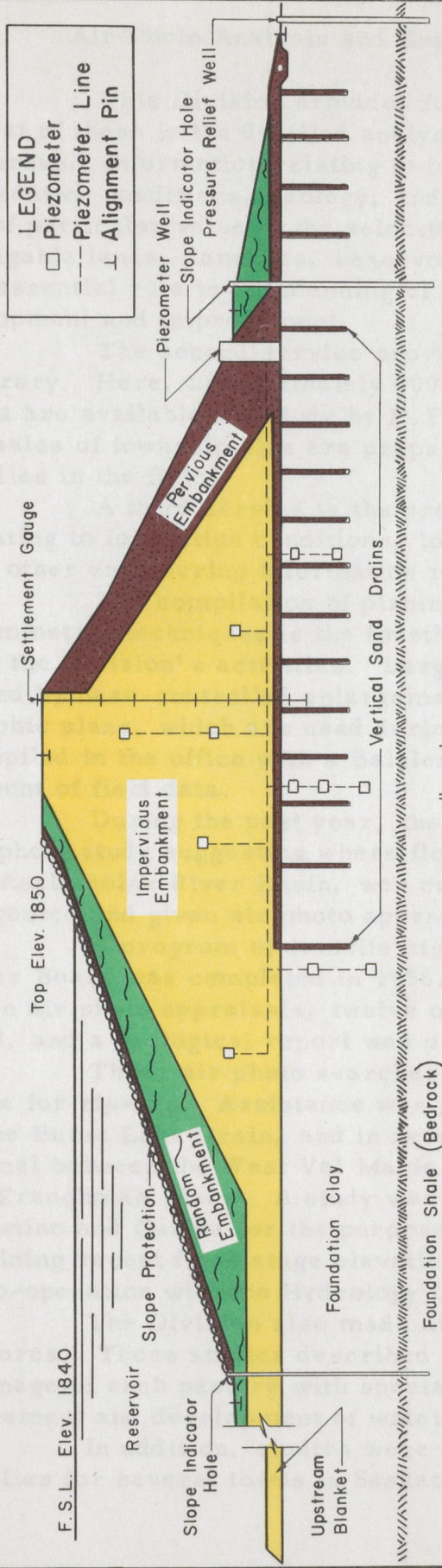
Columbo Plan student assisting P. F. R. A. soil mechanics engineer at Boundary Dam, to set settlement gauges. Ref. #12244

Plate XV contains a cross section of the embankment and the valley profile at the dam centerline. The embankment cross section shows the different types of material in the earth fill dam and the test installations that have been incorporated into the design. The valley profile drawing illustrates the various materials encountered in the foundation, which include sand and soft clay in the valley bottom and coal and bedrock materials in the abutments and below the sand and clay.

Test apparatus installed in other earth structures described in previous reports, was observed at intervals throughout the year. The results of these determinations are providing valuable information to be utilized in the design and construction of future projects.

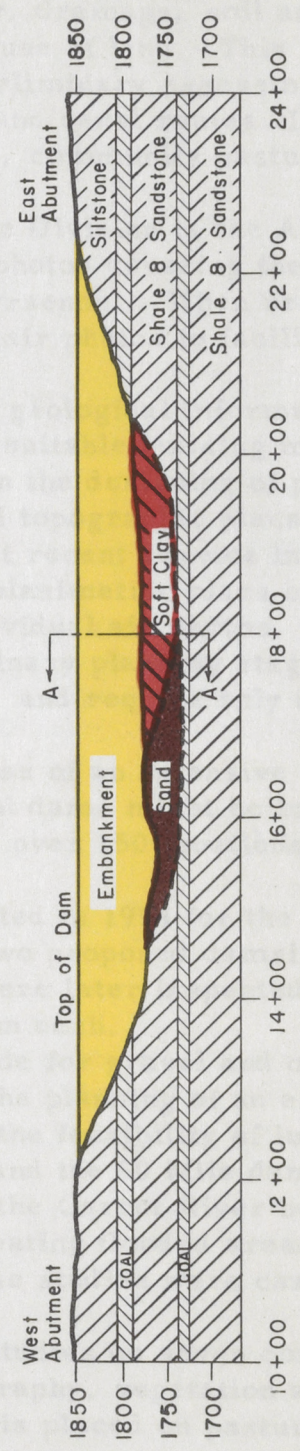
Practical research projects to study conditions peculiar to water development in Western Canada are also being continued. They involve investigations of highly plastic clays, clay shales, canal lining materials, western concrete aggregates, local cements, concrete repair, winter concreting, and flexible metal conduits. Papers have been presented covering the first and second items and a paper covering canal lining studies is now being prepared.

Other services rendered during the year by the Soil Mechanics and Materials Division included investigational work carried out for the Federal Department of Public Works, the Department of National Defence and the Province of Manitoba and development work for the Drainage Division and Community Pasture Branch of P. F. R. A.



Scale: 1" = 50'

BOUNDARY DAM CROSS SECTION A-A
SHOWING
TYPES OF TEST INSTALLATIONS



Scale: 1" = 200'

VALLEY PROFILE AT DAM CENTERLINE

PLATE XV

MARCH 21, 1921

ANTHROPOMETRIC DATA CENTERLINE



The drawing is a cross-section of a dam, showing the internal structure and materials. The legend indicates the following materials: GRAVEL, SAND, CLAY, CONCRETE, and ROCK. The vertical scale on the left ranges from 0 to 100 feet. The horizontal scale at the bottom indicates a length of 100 feet. The dam structure is shown in cross-section, with a central core of concrete and gravel, surrounded by layers of sand and clay. The drawing is oriented vertically on the page.

Air Photo Analysis and Engineering Geology Division

This Division provides four types of service to P. F. R. A. First of these is the detailed analysis and interpretation of air photos to provide information relating to topography, drainage, soil and foundation conditions, geology, and cultural use of land. This service is of particular value in the selection and preliminary assessment of irrigable lands, damsites, reservoir areas and canal routes. It plays an essential role in the planning of P. F. R. A. community pasture development and improvement.

The second service provided by the Division is the Air Photo Library. Here, approximately 400,000 air photos covering the P. F. R. A. area are available for study by P. F. R. A. personnel. When required, mosaics of township size are prepared from air photos to facilitate studies in the field.

A third service is the provision of geological information relating to foundation conditions, location of suitable building materials and other engineering information required in the designing of projects.

The compilation of planimetric and topographic plans by photogrammetric techniques is the fourth and most recent service incorporated into the Division's activities. Large-scale planimetric plans are produced by base-controlled enlargement of individual air photos. Topographic plans, which are used during preliminary planning stages, are compiled in the office with a Balplex Plotter, and require only a limited amount of field data.

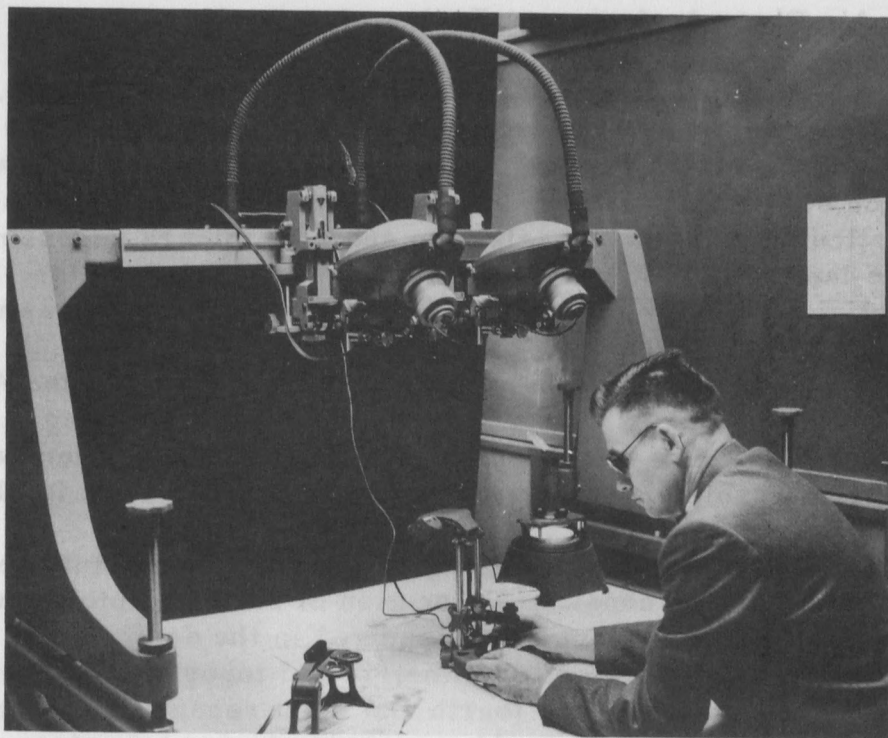
During the past year, the first phase of an extensive office air photo study suggesting where flood control dams might be located in the Assiniboine River Basin, was completed; over 150 locations were suggested and given air photo appraisals.

A program of dams site studies started in 1954 for the Fraser River Board was completed in 1956. Sixty-two proposed dams sites were given air photo appraisals, twelve of these were later inspected in the field, and a geological report was prepared on each.

Three air photo searches were made for gravel and one was made for rip-rap. Assistance was given in the planning of an extension to the Burnt Lake Drain, and in determining the feasibility of locating a canal between the West Val Marie Project and the 50 Mile dams site on the Frenchman River. A study was made of the Carrot River between Kinistino and Carlea for the purpose of delineating flooded areas and obtaining recent flood stage elevations. These studies were carried on in co-operation with the Hydrology Division.

The Division also made air photo studies on seven community pastures. These studies described the topography, vegetation and drainage of each pasture with special emphasis placed on pasture improvement and development of watering facilities.

In addition, studies were made to assist in locating water supplies for several towns in Saskatchewan and Manitoba.



Balplex stereo-plotting machine used for the compilation of topographic maps.

Ref. #13799

During the year, the Division produced a total of 454 standard township mosaics; 127 of these were made for the community pasture improvement program; 241 were made for the Division studies on the Assiniboine River Basin, and the remaining 86 were distributed over various other projects. Three fully controlled mosaics, each covering a scaled distance of 25 miles, were made of the Lillooet Valley in British Columbia.

Design Division

Activities of the Design Division include:-

- (a) The design and production of drawings for all major engineering works and structures.
- (b) The preparation of specifications and calling for tenders on the construction of large projects.
- (c) The handling of problems arising out of construction which requires special advice or research.
- (d) The inspection and study of maintenance, reconstruction or modification problems which arise from time to time in connection with existing projects.
- (e) The provision of print reproduction services.

During the year, the Division provided engineering plans and specifications for 20 new contracts having a total value of over \$4,600,000.00. Included in this figure was a contract for \$1,500,000.00 for the construction of Boundary Dam, a project being undertaken by the Saskatchewan Power Corporation on Long Creek 2 1/2 miles south of Estevan, for which P.F.R.A. is providing complete engineering service on a reimbursable basis.

Work undertaken by the Division for the Power Corporation on this project has included the design of the earthfilled dam, design of the reinforced concrete spillway and outlet structure, preparation of plans and specifications on construction, and field engineering inspection. As mentioned in the Soil Mechanics section of this report, one of the main problems involved in the design of Boundary Dam was to plan an effective cut-off for seams of coal in the dam foundation.

In Alberta, the Design Division continued in 1956 to give service to the Government of Alberta in connection with irrigation development work being undertaken by that Province in sections of the West Block of the Bow River Irrigation Project. Some 4 different contract units were completed for the Alberta Government during the year, having an estimated value in excess of \$800,000.

The Hydraulic Section of the Design Division carried out an increased number of field tests during 1956. Such tests made on full scale structures in the field are desirable to complement studies made on small scale models in the Hydraulics Laboratory. These field tests included:-

- (1) Velocity and jump height determination on Travers Reservoir Chute inlet in July.
- (2) Performance tests on Duncairn Conduit outlet in August.
- (3) Chute velocity determinations and performance tests on Ronalane Wasteway in October.

A full program of model studies was also carried out by the Hydraulics Section in the Hydraulics Laboratory in Regina. This program included:-

- (1) Determination of sluice discharge co-efficients.
- (2) Determination of weir discharge co-efficients for broad-crested and trapezoidal weirs.
- (3) A detailed study on the problem of energy dissipation for chute spillways. This item alone required about 5 months of testing.

Drainage Division

The salinity problem experienced on much of the soil in Western Canada is accentuated on lands under irrigation. In addition, surplus water on irrigated land usually results in some areas becoming waterlogged. Experience has shown that without proper drainage on irrigated land, the salt and water content of the soil builds up to a point where it becomes unproductive. To investigate the problems arising on P.F.R.A. irrigation projects, the Drainage Division was organized in 1949.

Through surveys and experimental work, information is provided for the maintenance and reclamation of irrigated land. During the development of irrigation projects, the Drainage Division works closely with the other services on the location of canals, on problems associated with canal seepage and on the location and type of drains for specific soil types.

The activities of the 1956-57 season included investigations, surveys, construction and reclamation work on the Bow River and St. Mary Projects in Alberta, and the Eastend, Maple Creek and Swift Current Irrigation projects in Saskatchewan.

BOW RIVER PROJECT

Farm Use of Water

Since 1954, in co-operation with the Experimental Farms Service studies have been conducted to determine the efficiency of actual farm use of irrigation water in the Vauxhall and Hays Districts of the Bow River Irrigation Project. Low efficiencies in the use of water for irrigation on the project appeared to be due to the average depth of water applications exceeding the soil root zone storage capacity.

Ground Water Observations

The reading of piezometers permanently installed in 1951 continued through 1956. The general trend toward lower ground water levels on the project over the first few years did not continue during 1956 but remained stationary throughout the year.

Canal and Dugout Linings

Studies of canal and dugout linings were initiated in 1954. Polyethylene film was tested as a dugout lining in 1955 and as a dugout cover in 1956. These studies have shown greater care of installations is necessary for both liner and cover before their true value can be ascertained.

Land Levelling

Surveys were completed on 1271 acres on 25 farms in the Vauxhall area. Levelling plans were completed for 28 farms totalling

1394 acres. Construction with crawler tractors and scrapers was completed on 17 farms, totalling 656 acres. The information gained from a study of the utilization of land levelled in the Vauxhall area will be used to improve levelling technique and irrigation practices.

Drainage Surveys

Drainage surveys were made on Drain Area #9 and #1 to record the topography, drill and auger holes, ground water observation wells and tentative drain location. Surveys were also made in connection with soil salinity and soil classification. Other miscellaneous surveys were conducted in the Vauxhall and Hays area.

Seepage

Measurements were continued on the amount of water loss by seepage in the Vauxhall area. Where seepage is excessive, water logging and alkali patches have appeared. Clay linings of canals have significantly reduced canal seepage.

Distributary 'U'

In 1956 an investigation to determine cultural and irrigation methods necessary to bring this area under sustained irrigation and the possibility of using sub-surface irrigation was initiated.

A tile drain with controls and six permanent observation wells were installed to observe fluctuations in water levels in the soil. Surface irrigation using 6-inch syphon tubes proved much more efficient than opening the ditch banks. Tests indicated that with improved water-spreading facilities a stable ground water level could be controlled as desired. Measurements were also taken of the water entering the area and the amount being discharged through the drainage outlet with a view to evaluating and improving irrigation efficiency.

Soil investigations involving chemical and fertility analysis, field infiltration studies, and available moisture studies were extended in 1956.

Drainage and Soil Classification

Soil salinity and drainage surveys were completed on a number of farms and recommendations for improving and reclaiming problem areas were suggested. In addition, physical and chemical laboratory tests have been carried out on nine quarters in the Vauxhall area and approximately 60 lots proposed for irrigation in the Hays area.

The Drainage Division also carried out soil investigations on several farms to determine whether land levelling would be advisable. Recommendations were made in accordance with the findings.

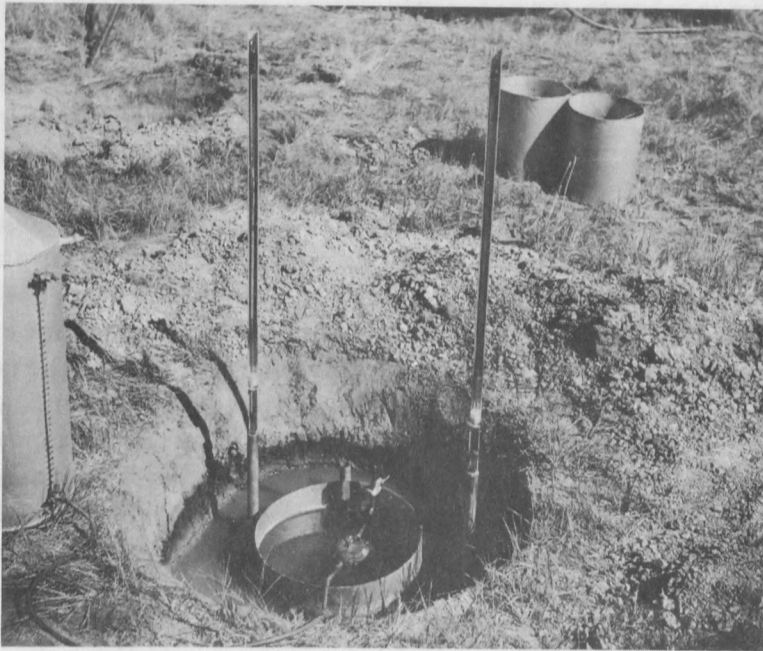
A detailed soil classification was made of the proposed irrigation development in the Grantham, Vauxhall and Hays areas.

During 1956 extensive investigations were carried out on land classed as non-irrigable because of salinity and high water table. Piezometers were installed to record ground water levels. Following a

complete soil survey, a drainage system was outlined and improvement of the present open drain was suggested. Leaching trials were begun in 1956 but were not sufficiently extensive to obtain any definite results.

Special Soil Investigations

Fertility and microbiological surveys carried out in 1956 on levelled land indicated a reduction in the fertility of cut and fill areas. The Drainage Division also made other special soil investigations such as infiltration studies on levelled land, ring and well permeameter methods of determining hydraulic conductivity, and density studies of glacial till.



Gauge installation for field determination of hydraulic conductivity above a water table.

Ref. #12769

Irrigation and Drain Water Studies

Routine testing of the quality of irrigation waters begun in 1954 was extended during 1956. The water diverted from the Bow River at Carseland is of very good quality. An increase in salt content is noted in Lake McGregor and Travers Dam storages. The Little Bow River appears to add appreciable salts to the Travers Reservoir.

Drain water samples taken on the Bow River project were analyzed. In general, the salt concentration varies directly with the rate of flow. A considerable amount of salt is removed where drains have been established. Discharge rates from tile drains were measured periodically last year.

ST. MARY PROJECT

Soil and Drainage Investigations

Hydraulic conductivity studies were completed in the Cranford area adjacent to the High-Line Canal. A preliminary study was made on selected portions of the older irrigation areas at Coaldale, Rotation 'U' at the Lethbridge Experimental station, Diamond City and Picture Butte. Rotation 'U' containing land which has a record of high production under irrigation for 47 years without drainage, shows a salt concentration somewhat higher than virgin prairie soil but not in the range that affects plant growth. The water table has been from 2 to 4 feet for many years. Some profiles in Rotation 'U' indicate a trend for salt to accumulate in the surface foot of soil which may lower future crop yields. The lack of evidence of salinization in the heavier soils in the areas studied is thought to be due to the low infiltration rate of the surface soil and the small amount of irrigation water applied.

Taber Area

Ground water reading continued in the Taber area in 1956 showed a downward trend in the water table. There appears to be no indication of a general drainage problem developing in this area. Seepage loss measurements by ponding method were conducted on Laterals M and G. Varying degrees of seepage were observed along both canals.

Magrath Area

Seepage loss measurements conducted by the Drainage Division on the main canal and a lateral on this project indicated the losses to be sufficiently high to cause extensive land damage. The heavy soil and the shallow rock bed combined with the long period that the water is in the lateral, tends to create this unsatisfactory condition. Changes in irrigation procedure and the establishing of a drainage system on land suitable for drainage were recommended in this area.

EASTEND IRRIGATION PROJECT

Seepage loss measurements by the ponding method were carried out to test the effectiveness of lateral linings. These indicated a reduction in canal seepage where clay lining had been installed in 1951. Canal seepage has resulted in land along the canal being abandoned because of waterlogging and salinizing.

MAPLE CREEK IRRIGATION PROJECT

Surveys in this project show a slight increase in canal seepage through clay linings installed in previous years. The performance of

the clay lining continues to be satisfactory. Good grass growth along the canal bank and roadway eliminate canal bank erosion and weed growth.

Drainage by pumping is being developed on the Upper 'V' and Lower 'V' projects. Conclusive results have not yet been obtained.

SWIFT CURRENT IRRIGATION PROJECT

Seepage loss measurements on the main canal where it has been lined with asphalt or clay, show a considerable reduction in the amount of water loss through seepage. Shotcrete installed in 1950 in Lateral A is badly cracked even after being repaired.

Soil and drainage surveys to determine the suitability of selected sites for consumptive use of water studies in the Swift Current area by the Experimental Farm were undertaken by the Drainage Division in 1956.

Seepage from the Rush Lake lateral varies considerably. In some sections the adjacent land is becoming waterlogged. Surveys in this area show the heavy lake clay to be virtually undrainable. Tile drains installed in 1955 seem to be reasonably effective in cutting off flows from adjacent higher lands. The tile drain water discharge from the pumping well established on the project, decreased as the season progressed. This drainage water carries a high concentration of salt.

Herbert Supply Canal

Seepage from a section of the Herbert Main Supply Canal appears to have been checked with the use of a clay lining which was installed in 1952.

CONSTRUCTION EQUIPMENT AND SUPPLY DIVISION

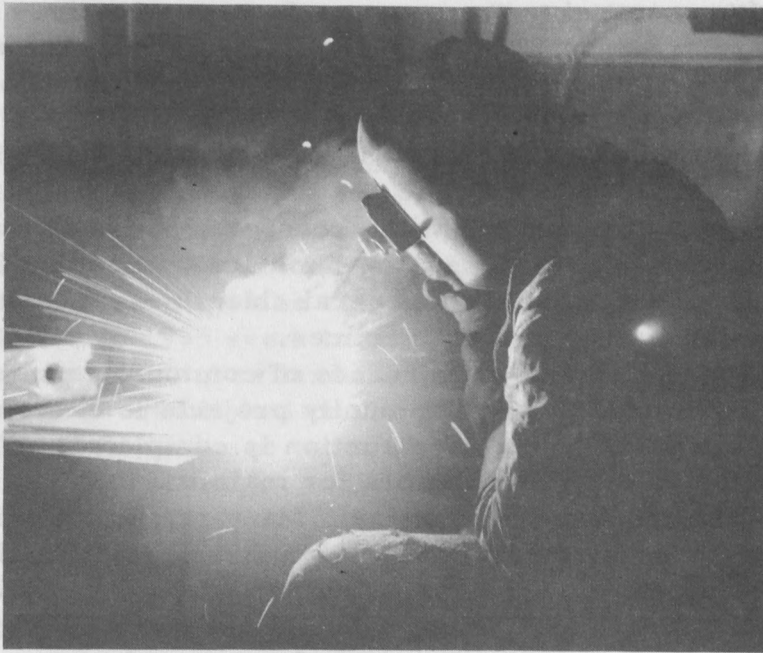
As the name of the division indicates, there are a variety of activities included in the division. These activities are generally of a service nature to other divisions of P. F. R. A. and Major Projects. Replacements for the fleet of vehicles, which comprises some 300 cars, trucks jeeps and snowmobiles, are purchased on a tender basis through a central purchasing agent. Vehicles are generally purchased from local dealers in the area where the vehicle will operate and most of the servicing of vehicles is done by local dealers. Records of operating cost are assembled and reported to the records office of the department for processing.

There are over 100 crown-owned residences and about 500 other buildings on community pastures and irrigation projects. Nearly all of these are in rural areas where fire protection is the responsibility of those occupying the buildings. A regular inspection of all buildings is maintained in order to see that adequate fire fighting equipment is serviceable and that the occupants are familiar with the use of the equipment. The inspection includes instruction in fire prevention practices which includes general cleanliness and tidiness of all premises, as well as safety practices.

The operation and maintenance of community pastures, irrigation developments, and community projects is carried out by P. F. R. A. for a period after construction is completed. The general policy is to employ local contractors for maintenance work and much of it is satisfactorily done in this way. Many repair jobs, however, are small and in isolated locations while others are difficult to estimate as they may have unusual construction problems. Maintenance jobs frequently require equipment which is not available from local contractors nor do they have experienced personnel to supervise the work. To supplement local contractors facilities, a number of versatile maintenance crews have been built up to provide this service. They are equipped with adequate machinery, tools, and services which, with the use of local earthmoving machinery, trucks, etc. enable them to do high quality work at reasonable cost and in a manner which has brought favorable public comment.

During the year, these crews undertook over 50 various jobs including improving stockwatering facilities in community pastures, building timber bridges, repairing spillways, constructing a root house at the Outlook predevelopment farm, building two gauging stations for hydrometric measurements and assisting the Department of Public Works with difficult pile driving work on a wharf on Last Mountain Lake. Without this supplemental service, many of these jobs might not have been done or have been done in a less satisfactory manner since they require skills and equipment not locally available and are not large enough to interest contractors who are equipped to undertake them.

To service the necessary equipment, the division maintains repair shops for both heavy equipment and vehicles. The use of these shops enables modification of equipment for special purposes and the manufacture of some peculiar requirements. Facilities at the Moose Jaw depot enable a number of otherwise seasonally employed men to be used through most of the winter months, assisting with equipment repair, construction of camp trailers, building water troughs for community pastures and other work. This helps to make it possible for a relatively small number of men to accomplish a large volume of work during the limited field work season.



Close-up of welder making frame for camp trailer
in the P.F.R.A. workshop at Moose Jaw.

Ref. #3288

The problem of supply of materials which are not locally available at the time required, is aided considerably by a revolving stores fund. This fund enables treated timber, which is usually available only on special order, being ordered in advance of requirements and carried forward to the following year if necessary. Some steel items, which are often in short supply and are frequently required for emergency work, can be stocked in limited quantity in the revolving fund stores. The stores section is operated on a minimum stock basis and adequate records kept to prevent unnecessary overstocking or carrying of unnecessary items. Other stores required for general use are carried only as required and material is obtained direct from local sources wherever possible.

The extensive nature of this division's activities requires employment of a variety of skills, trades and abilities. Adequate supervision of all activities is provided by experienced personnel and every effort is made to provide efficient service to the whole organization.

PLANNING AND INFORMATION DIVISION

First established in 1949, the Planning and Information Division functions as a separate unit within the P.F.R.A., providing planning and information, library and photographic services to all branches and divisions of the Organization.

Planning and Information:- The duties of this section are principally the collection and assembling of factual information pertaining to the history and development of P.F.R.A. projects for use as a guide in future planning and in the preparation of reports and other publications required for public distribution. Included in this work is the preparation of progress and summary reports on P.F.R.A. projects; the preparation of the P.F.R.A. Annual Report; and the preparation of annual reports on P.F.R.A. activities used in the Annual Report of the Minister of Agriculture, and the Canada Year Book. In addition, it involves the preparation and editing of material on P.F.R.A. activities used in articles appearing in technical journals, magazines and newspapers; filling requests for information on P.F.R.A. activities from schools, government and private agencies, and research institutions; and carrying out special research assignments as required by the Director or other divisions of P.F.R.A.

The section is also called upon at times to represent P.F.R.A. on special departmental and inter-departmental committees; act as secretary at meetings arranged by P.F.R.A.; and handle arrangements for public events.

A further activity of the section is to be responsible for arranging the program and itinerary of Columbo Plan students and other visitors to P.F.R.A.

Library:- The principal responsibilities of the Planning and Information Division Library, are to handle the ordering and distribution of books, periodicals and publications required by P.F.R.A. headquarters and field offices, and to maintain a complete inventory and catalogue for all books, publications and government documents held by P.F.R.A. either in the central library or field offices. The library also provides an inter-library loaning service to all divisions, branches and offices of P.F.R.A. as well as other Federal Department of Agriculture offices in Regina, Indian Head and Swift Current.

Photography:- This section provides photographic reproduction services and photographer services to all divisions and branches of P.F.R.A. as well as other Federal Government Departments in Regina and Indian Head; assumes responsibility for the care and maintenance of P.F.R.A. photographic equipment in Regina and field offices; and the cataloguing and filing of P.F.R.A. photographs and negatives.



General view of information and reference library
at P.F.R.A. headquarters - Regina.

Ref. #13800

In addition to routine duties performed by the Planning and Information Division such as the preparation of the P.F.R.A. Annual Report, special efforts were directed during the year to re-vamping the system of filing and cataloguing photographs in the photographic section, which now contains approximately 15,000 black and white prints and 3,000 color slides. The present system not only greatly expedites the handling of photographic material in the section itself, but serves as a guide on which can be based systems of filing photographs in branch offices. Emphasis in the photographic program during 1956 was also given to establishing more complete ground and air coverage for P.F.R.A. projects completed or currently under development, and conducting searches through old reports and files in branch offices, for early development pictures.

Increased attention during the 1956-57 fiscal year was devoted to the preparation of progress and summary reports on projects currently under investigation, under construction, or completed during the year. The intention is that these reports will be used as a ready reference for information concerning the early history, construction and operation of projects undertaken by P.F.R.A. For this purpose the reports will include in addition to a written section, an appendices containing statistical data pertaining to each project and a bibliography of the more important reports and memoranda written on the subject. To date fifteen reports of this kind have been written covering the larger water development projects.

Over 500 separate requests for information were handled by the Planning and Information Division of P.F.R.A. during 1956. The majority of these requests originated from schools and colleges in the three prairie provinces. Others included requests submitted to P.F.R.A. through Government channels in Ottawa, requests from newspapers and magazine publishing houses, and requests from private individuals.

Following lengthy negotiations, the Planning and Information Library was officially designated as a branch of the central agricultural library in Ottawa in 1956, to function on a regional basis serving all Federal Government services of the Department of Agriculture in and surrounding Regina. A similar attempt is being made to establish closer ties with the Information Division of the Federal Department of Agriculture in Ottawa.

Cumulative Statement

Development and Operation of Community Pastures under the Prairie Farm Rehabilitation Act

1938 to March 31, 1957

Fiscal Year	No. of Pasture Units in Operation	Area of Land in Pastures (Acres)	Total Cost of Construction of Pastures \$	Livestock Units Carried on Pastures	X Acres per Unit of Live- stock ¹	Cost of Operation		Net Operating Cost per Unit of Livestock \$	Average Charge per Unit Live- stock to Farmers \$
						Revenue \$	Operating Costs \$		
1938-39	14	189,800	165,995.03	3,231	58.7	6,339.92	10,185.52	3.15	1.96
1939-40	26	612,300	663,471.25	11,522	53.1	21,632.71	20,945.84	1.82	1.88
1940-41	35	884,500	1,004,305.91	23,245	38.1	43,451.56	35,291.05	1.52	1.87
1941-42	38	936,548	1,187,360.92	33,230	28.2	65,434.89	50,607.22	1.52	1.97
1942-43	45	1,261,100	1,129,487.54	51,127	24.7	98,292.32	79,906.76	1.56	1.92
1943-44	46	1,268,140	1,558,055.31	54,472	23.3	111,114.25	107,534.66	1.97	2.04
1944-45	49	1,337,320	1,699,012.21	59,997	22.3	151,461.08	117,064.90	1.95	2.52
1945-46	50	1,361,440	1,857,020.37	67,778	20.1	167,045.16	136,567.09	2.01	2.46
1946-47	53	1,412,860	2,072,274.21	68,493	20.6	198,115.27	145,292.51	2.12	2.89
1947-48	53	1,417,320	2,208,919.12	66,347	21.4	203,888.11	161,471.05	2.43	3.07
1948-49	54	1,436,480	2,486,277.28	71,393	20.1	204,012.40	175,666.27	2.46	2.86
1949-50	54	1,439,680	2,809,196.14	70,308	20.5	211,624.23	172,255.25	2.45	3.01
1950-51	56	1,521,080	3,237,330.55	68,858	22.1	221,129.45	217,867.15	3.16	3.21
1951-52	57	1,574,642	3,426,586.10	77,240	20.4	335,327.16	237,742.13	3.08	4.34
1952-53	59	1,652,020	3,754,098.41	94,137	17.5	438,513.75	373,737.36	3.97	4.66
1953-54	60	1,678,736	3,963,572.83	109,583	15.3	507,179.14	490,807.89	4.48	4.55
1954-55	60	1,696,900	4,273,916.79	106,322	15.9	496,805.78	466,153.69	4.38	4.66
1955-56	60	1,728,700	4,509,668.59	108,499	15.8	499,045.13	501,540.73	4.67	4.60
1956-57	61	1,759,570	4,832,863.47	117,441	14.9	548,601.01	508,002.83	4.33	4.67
						4,529,013.32	4,508,639.90		

X - A livestock unit indicates one head of cattle, one horse, or five sheep.

A pasture unit may include one or more pastures, but it is operated under one management.

APPENDIX II

P. F. R. A. Community Pastures in Operation During the Fiscal Year Ended March 31, 1956-57

Community Pastures and Headquarters	Total Area of Pasture Fenced (Acres)	Accumulated Cost of Construction March 31, 1956	Accumulated Cost of Construction March 31, 1957	1956-57	
				Cattle	Stock Pastured Horses
Pasture Units - Saskatchewan					
Coalfields #4, North Portal	31, 940	129, 619.28	144, 501.23	2, 240	64
Estevan - Cambria #5-6, Macoun	6, 720	14, 246.95	17, 216.68	240	--
Masefield #17, Orkney	33, 600	86, 196.81	90, 833.27	1, 604	4
Lone Tree #18, Bracken	32, 960	72, 061.39	86, 954.76	2, 363	24
Battle Creek #20, Divide	66, 880	109, 469.56	112, 267.53	2, 455	17
Nashlyn #21, Consul	61, 520	69, 767.87	77, 963.51	2, 387	--
Govenlock #22, Govenlock	68, 800	94, 250.93	105, 247.04	2, 454	--
Lomond #37, Pasture #1, Goodwater	23, 360	60, 739.60	69, 010.93	2, 123	26
Lomond #37, Pasture #3, Maxim	18, 400	65, 755.14	68, 978.93	1, 784	17
Laurier #38, Lomond #37 - #2, Radville	37, 120	74, 920.62	81, 958.63	3, 037	67
The Gap #39, Hardy	13, 760	43, 001.67	49, 525.28	1, 397	16
Val Marie #47, Val Marie	156, 160	248, 271.87	249, 955.36	7, 319	9
Beaver Valley #47A, Val Marie	11, 360	23, 956.95	25, 445.11	679	--
Reno #51, Pasture #1, Robsart	17, 120	56, 188.94	57, 233.59	1, 154	12
Reno #51, Pasture #2, Consul	11, 360	28, 197.48	28, 197.48	1, 062	--
Tecumseh #65, Forget	18, 560	60, 599.00	64, 490.77	2, 208	31
Brokenshell #68, Pasture #1, Yellow Grass	22, 720	45, 814.59	57, 652.77	1, 683	49
Brokenshell #68, Pasture #2, Weyburn	8, 160	13, 583.47	14, 818.47	707	--
Excel - Key West #71-70, Ormiston	30, 400	70, 038.16	76, 038.07	3, 035	--
Auvergne - Wise Creek #76-77, Ponteix	42, 880	112, 613.89	137, 158.25	3, 081	12
Wellington #97, Tyvan	25, 680	94, 512.13	98, 669.45	3, 577	34
Caledonia - Elmsthorpe #99-100, Milestone	24, 800	103, 524.12	106, 048.21	2, 075	47
Shamrock #134, Shamrock	26, 080	75, 099.93	77, 574.39	2, 097	27
Swift Current - Webb #137-8, Beverly	18, 720	76, 214.77	77, 929.61	1, 569	5
Gull Lake #139, Tompkins	10, 720	30, 189.71	30, 650.46	542	--
Big Stick #141, Maple Creek	18, 160	40, 929.03	43, 339.75	1, 260	12
Bitter Lake #142, Maple Creek	47, 410	109, 504.42	111, 104.36	2, 634	--
Spy Hill #152, Welby (operated in conjunction with Ellice, Manitoba)	20, 000	50, 399.64	51, 315.25	2, 280	23
Elbow #223-4, Elbow	29, 440	74, 779.63	77, 615.14	2, 440	43
Beaver Hills #245-6, Homefield P.O.	44, 160	105, 322.02	111, 291.30	2, 511	117
Willner #253, Rosemae P.O.	12, 800	50, 694.58	51, 450.24	1, 676	20

Community Pasture and Headquarters	Total Area of Pasture Fenced (Acres)	Accumulated Cost of Construction March 31, 1956	Accumulated Cost of Construction March 31, 1957	1956-57 Stock Pastured	
				Cattle	Horses
Pasture Units - Saskatchewan - Cont'd.					
Coteau #255, Birsay	27, 520	57, 272.63	62, 818.09	1, 619	14
Monet #257, Elrose	46, 520	105, 135.47	111, 055.85	3, 070	21
Fairview #258, Rosetown (under construction)	17, 000	34, 404.28	82, 799.27		
Newcombe #260, Glidden	53, 120	158, 035.41	162, 059.35	3, 488	22
Mantario #262, Empress, Alta.	24, 960	67, 323.68	69, 706.80	1, 440	--
Wreford #280, Hatfield	13, 440	77, 518.61	78, 916.96	1, 424	--
McCraney #282, Davidson	10, 720	66, 934.07	68, 725.24	1, 778	--
Rudy-Rosedale #284-3, Broderick	19, 040	83, 975.55	87, 109.35	2, 049	44
Hillsburgh #289, Brock	13, 600	52, 235.09	53, 826.64	809	--
Eagle Lake #289-319, Netherhill	22, 500	60, 096.92	81, 258.44	918	12
Kindersley - Elma #290-1, Smiley	21, 400	110, 303.62	112, 274.62	1, 978	59
Usborne #310, Venn	12, 720	36, 570.38	37, 070.38	1, 431	--
Dundurn #314, Dundurn	44, 960	110, 144.16	110, 899.54	1, 934	--
Montrose #315, Donavon	20, 480	54, 110.60	63, 329.25	1, 235	--
Oakdale #320, Beaufield	20, 800	60, 346.58	60, 411.74	942	10
Antelope Park #322, Hoosier	34, 500	100, 572.97	102, 107.61	2, 580	54
Wolverine #340, Plunkett	17, 280	64, 552.43	67, 756.85	1, 863	35
Mariposa #350, Kerrobert	27, 020	84, 091.97	88, 027.34	2, 044	45
Progress #351, Kerrobert	19, 680	59, 021.39	64, 234.48	1, 637	--
Heart's Hill #352, Compeer, Alta.	15, 160	28, 105.07	36, 272.47	1, 617	1
Park #375, Langham	7, 040	22, 535.62	22, 535.62	411	--
Battle River - Cutknife #438-9, Gallivan	30, 720	80, 098.56	81, 983.45	1, 570	25
Royal #465, Lorenzo	65, 220	165, 796.66	187, 302.82	1, 760	17
Paynton #470, Paynton	23, 040	70, 337.11	70, 917.07	1, 381	25
Totals for Saskatchewan		4, 099, 982.98	4, 415, 835.05	104, 651	1, 060

Special Project - Bitter Lake Irrigation included in Bitter Lake Pasture

Community Pastures and Headquarters	Total Area of Pasture Fenced (Acres)	Accumulated Cost of Construction March 31, 1956	Accumulated Cost of Construction March 31, 1957	1956-57 Stock Pastured	
				Cattle	Horses
Pasture Units - Manitoba					
Ellice Pasture, Welby, Sask. (operated in junction with Spy Hill #152)	20,320	28,746.37	28,746.37		
Archie Pasture, Welwyn, Sask.	40,340	88,295.35	89,249.36	885	6
Portage Pasture, Poplar Point	14,640	43,385.21	44,793.85	2,485	69
Woodlands Pasture, Poplar Point	20,960	67,942.95	68,220.56	2,454	31
Lakeview Pasture, Langruth	29,280	80,482.71	80,530.71	2,524	5
Westbourne Pasture, Gladstone	11,520	39,156.69	40,151.47	1,299	2
Langford Pasture, Neepawa	19,040	61,676.33	65,336.10	1,951	19
Wallace Pasture, Elkhorn	3,280	(Operated by R.M. Wallace)			
Totals for Manitoba	159,380	409,685.61	417,028.42	11,598	132
GRAND TOTALS	1,759,570	4,509,668.59	4,832,863.47	116,249	1,192

APPENDIX III

PRAIRIE FARM REHABILITATION ACT

Showing number of projects and amount of financial assistance paid since the inauguration of program to

March 31, 1957

Province & Classification	DUGOUTS			STOCKWATERING DAMS			IRRIGATION SCHEMES			TOTALS	
	Projects Paid	Financial Assistance Paid		Projects Paid	Financial Assistance Paid		Projects Paid	Financial Assistance Paid		Projects Paid	Financial Assistance Paid
<u>MANITOBA</u>											
Individual	10,503	1,037,824.20		309	22,809.21		124	37,479.51		10,936	1,098,112.92
Neighbor & Community	47	9,282.04		26	20,449.43		7	2,053.00		80	31,784.47
Total	10,550	1,047,106.24		335	43,258.64		131	39,532.51		11,016	1,129,897.39
<u>SASKATCHEWAN</u>											
Individual	28,401	3,157,578.74		4,088	350,344.47		2,046	468,770.85		34,535	3,976,694.06
Neighbor & Community	434	181,190.38		142	99,113.19		82	34,149.37		658	314,452.94
Total	28,835	3,338,769.12		4,230	449,457.66		2,128	502,920.22		35,193	4,291,147.00
<u>ALBERTA</u>											
Individual	4,212	439,638.45		2,110	199,324.81		950	224,348.07		7,272	863,311.33
Neighbor & Community	36	12,022.64		43	27,337.61		19	13,178.07		98	52,538.32
Total	4,248	451,661.09		2,153	226,662.42		969	237,526.14		7,370	915,849.65
GRAND TOTAL	43,633	4,837,536.45		6,718	719,378.72		3,228	779,978.87		53,579	6,336,894.04

APPENDIX IV
Progress by Years in the Construction of Small Projects P.F.R.A. Water Development Program
1935 to March 31, 1957.

Number of Projects Constructed					Financial Assistance Paid on Projects				
Fiscal Year	(1) DO	SWD	IRR	TOTAL	DO	SWD	IRR	TOTAL	
1935-36	49	28	5	82	1,558.53	2,374.04	869.51	4,802.08	
1936-37	859	465	101	1,425	41,053.44	36,022.13	17,608.74	94,684.31	
1937-38	1,493	850	215	2,558	105,293.19	83,287.75	41,419.06	230,000.00	
1938-39	2,745	855	178	3,778	283,445.40	105,998.08	29,493.11	418,936.59	
1939-40	1,023	193	44	1,260	166,836.34	65,785.92	6,419.91	239,042.17	
1940-41	4,433	877	232	5,542	529,350.72	86,515.21	37,244.38	653,110.31	
1941-42	2,773	447	115	3,335	288,754.54	36,890.14	18,987.16	344,631.84	
1942-43	1,275	174	44	1,493	120,049.61	13,755.46	5,759.93	139,565.00	
1943-44	1,073	202	32	1,307	103,918.24	17,625.54	5,812.26	127,356.04	
1944-45	3,119	221	38	3,378	339,064.47	20,704.26	5,257.78	365,026.51	
1945-46	4,316	261	28	4,605	489,782.13	27,752.56	4,685.28	522,219.97	
1946-47	4,945	194	48	5,187	581,172.05	19,549.87	8,697.82	609,419.74	
1947-48	1,804	226	56	2,086	202,443.78	22,256.56	8,797.00	233,497.34	
1948-49	1,505	193	62	1,760	167,718.66	20,983.66	12,993.82	201,696.14	
1949-50	3,020	145	111	3,276	354,582.32	13,715.64	29,742.83	398,040.79	
1950-51	3,432	472	716	4,620	400,960.36	49,522.08	203,979.40	654,461.84	
1951-52	473	96	343	912	55,172.10	10,146.32	109,556.66	174,875.08	
1952-53	861	119	288	1,268	100,219.54	13,382.92	92,397.46	205,999.92	
1953-54	1,774	178	181	2,133	204,148.93	18,373.83	46,550.99	269,073.75	
1954-55	1,300	234	180	1,714	149,184.48	24,751.11	44,473.20	218,408.79	
1955-56	493	145	104	742	56,733.44	15,028.46	23,236.94	94,998.84	
1956-57	868	143	107	1,118	96,094.18	14,957.18	25,995.63	137,046.99	
TOTAL	43,633	6,718	3,228	53,579	4,837,536.45	719,378.72	779,978.87	6,336,894.04	

(1) DO - Dugout SWD - Stock Watering Dam IRR - Individual Irrigation Project

APPENDIX V

WATER DEVELOPMENT - IRRIGATION PROJECTS - STORAGE - COMMUNITY PROJECTS To March 31, 1957.

MANITOBA

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
Alexander Soil Conservation	Alexander	Soil Conservation	1944	-	-	\$ 5,250.00
Birtle Dam	Birtle	Stockwatering	1947	-	-	11,490.00
Boissevain	Boissevain	Storage	1954	-	580	29,992.00
Brandon Flood Irrigation	Brandon	Flood Irrigation	1949	1,000	-	27,107.00
Brandon Water Supply	Brandon	Storage	1940	-	500	3,996.00
Clearwater Storage	Clearwater	Stockwatering	1938	-	12	5,949.00
Crystal City Storage	Crystal City	Stockwatering	1935	-	3	3,334.00
Dead Horse Creek Dam	Morden	Irr. & Stockwatering	1941	100	1,200	344,274.00
Dead Lake Community	Gladstone	Irr. & Stockwatering	1950	20	90	1,933.00
Deloraine	Deloraine	Stockwatering	1953	-	1.5	770.00
Edwards, R.M. of	Melita	Stockwatering	1935	-	100	10,214.00
Hogue Dam	Sanford	Stockwatering	1953	-	-	29,183.00
Hampson Dam	Sanford	Storage	1954	-	420	16,899.00
Hartney	Hartney	Irr. & Dam	1941	-	-	10,264.00
Killarney	Killarney	Multi-purpose Reservoir	1956	-	800	41,965.00
LaSalle River Dams	LaSalle	Stockwatering	1941	-	900	22,989.00
Lewko Dam	Sanford	Storage	1954	-	320	20,874.00
Little Souris River Dam	Melita	Stockwatering	1945	-	250	1,380.00
McAuley Community Dam	McAuley	Stockwatering	1955	-	20	2,051.00
Melita	Melita	Irr. & Dam	1941	3,900	3,200	11,372.00
Minnedosa Dam	Minnedosa	Storage	1950	20	1,500	105,051.00
Morris River - Rock Lake	Carman	Stockwatering	1940	-	10,000	23,401.00
Napinka	Napinka	Irr. & Dam	1941	-	-	6,770.00
Oak Lake	Oak Lake	Irrigation	1956	13,000	-	119,205.00

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
Park Lake	Neepawa	Stockwatering	1953	-	-	\$ 21,626.00
Plum Coulee	Plum Coulee	Multi-Purpose Res.	Incomplete	-	12	4,352.00
Rosebank Dam	Rosebank	Stockwatering	1948	-	32	12,161.00
Rosseau River Dam	Dominion City	Multi-purpose Res.	Incomplete	-	-	46,546.00
Shoal Lake Project	Shoal Lake	Stockwatering	1948	-	3,500	8,491.00
Souris, Town of	Souris	Stockwatering	1935	-	150	76,837.00
St. Lazare Storage Reservoir	Lazare	Stockwatering	1948	-	5	1,470.00
Turtle Mountain Reservoir	Boissevain	Multi-purpose Res.	1956	70	600	11,968.00
Waskada	Waskada	Stockwatering	1953	-	1.5	853.00
Wawanesa	Wawanesa	Irr. & Dam	1941	-	-	125,332.00
Westbourne, R. M. Of	Gladstone	Stockwatering	1947	-	-	5,993.00
Whitemud River	Woodside	Stockwatering	1949	-	160	6,506.00
Whitemud River Storage	Gladstone	Stockwatering	1943	-	660	11,464.00
SASKATCHEWAN						
Aberdeen, R. M. of	Aberdeen	Dugout	1955	-	1.5	916.00
Adair Creek	Wolseley	Multi-purpose Dam	1956	40	350	59,849.00
Adam's Lake	Battle Creek	Irrigation	1936	1,500	2,000	8,831.00
Admiral Storage Dam	Admiral	Irr. & Stockwatering	1949	2,000	2,200	38,520.00
Airdale	Senlac	Dugout	1955	-	1.5	859.00
Allan	Allan	Stockwatering	1948	-	300	4,477.00
Alpine	Senlac	Dugout	1956	-	1.5	877.00
Alticane	Richard	Stockwatering	1951	-	2.5	858.00
Arcola	Arcola	Stockwatering	1939	-	(underground)	17,310.00
Arena	Arena	Irr. & Stockwatering	1949	1,600	3,200	5,218.00
Artland Grazing	Marsden	Dugout	1955	-	1.5	1,000.00
Avon Heights Grazing Co-op.	Shanavon	Stockwatering	1955	-	60	2,428.00
Avonhurst	Qu'Appelle	Stockwatering	1956	-	1.5	3,200.00
Baldon and Tilney	Baldon	Stockwatering	1950	-	4.	780.00
Balcarres	Balcarres	Stockwatering	1948	-	100	7,203.00
Balcarres Storage	Balcarres	Stockwatering	1953	-	20	10,294.00
Bateman	Gravelbourg	Irr. & Stockwatering	1949	400	114	4,739.00
Battleford	N. Battleford	Irrigation (pump)	1941	800	-	3,058.00

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
Beadle	Beadle	Stockwatering	1949	-	2	\$ 997.00
Beaver Creek	Hanley	Stockwatering	1951	-	200	7,998.00
Beechy #1	Beechy	Irr. & Stockwatering	1946	600	1,000	12,746.00
Beechy #2	Beechy	Irr. & Stockwatering	1948	200	100	6,240.00
Big Arm Storage	Liberty	Irr. & Stockwatering	1939	5,000	5,200	13,161.00
Black Hills Grazing Co-op.	Piapot	Dugout	1955	-	5	2,520.00
Boharm	Boharm	Stockwatering	1948	-	100	6,250.00
Boharm Community Dugout	Boharm	Multi-purpose Res.	1956	-	1.5	998.00
Bracken	Bracken	Stockwatering	1946	-	158	1,001.00
Braddock Dam	Braddock	Irrigation	1952	2,000	1,600	83,999.00
Bright Water Creek	Hanley	Irrigation	1956	2,500	3,500	11,713.00
Brock Community	Brock	Stockwatering	1949	-	2	951.00
Buffalo Pound	Qu'Appelle Valley	Irrigation	1940	x	-	83,723.00
Cabri	Cabri	Stockwatering	1948	-	340	37,553.00
Cactus Lake	Cactus Lake	Stockwatering	1949	-	2	730.00
Cadillac	Cadillac	Irrigation & Dam	1945	800	1,350	32,887.00
Camberley	Camberley	Irrigation & Dam	1950	-	100	2,106.00
Canora	Canora	Storage	1941	-	300	16,128.00
Carleton, Hamlet of	Carleton	Dugout	1955	-	1.5	998.00
Caron	Caron	Storage	1948	-	100	17,109.00
Caron Community (Dam)Centre	Caron	Stockwatering	1949	-	4	697.00
Caron Water Development	Thunder Creek	Storage & Dam	1944	-	43,500	710,433.00
Cedoux	Cedoux	Stockwatering	1947	-	314	4,999.00
Ceylon Reservoir	Ceylon	Irrigation & Dam	Incomplete	300	250	6,396.00
Chapleau Lake	Montmartre	Stockwatering	1949	-	3,530	8,208.00
Clearfield	Goodwater	Irrigation & Dam	1951	70	300	5,999.00
Conquest, Village of	Conquest	Dugout	1954	-	1.5	1,000.00
Coronach	Coronach	Irrigation & Dam	1947	300	1,450	97,807.00
Consul - Vidora	Vidora	Irrigation	1950	3,000	-	62,500.00
Crane Valley	Viceroy	Stockwatering	1950	-	2	599.00
Craven Dam	Qu'Appelle Valley	Irrigation	1943	x	-	33,675.00
Crooked & Round Lake	Qu'Appelle Valley	Irr. & Water Control	1941	x	-	48,650.00
Cut Knife	Cut Knife	Stockwatering	1950	-	5	280.00
Cypress Storage	Ravenscrag	Storage for Irrigation	1939	20,000	80,000	467,691.00
Dalmeny	Dalmeny	Stockwatering	1951	-	3	1,000.00
Davidson	Davidson	Irrigation & Dam	1937	100	277	3,114.00
Davin	Kronau	Stockwatering	1947	-	1,080	13,501.00
Dead Lake	Macoun	Irrigation & Dam	1941	Souris River Development		
Delisle	Delisle	Stockwatering	1950	-	45	17,528.00
						4,899.00

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
Denzil	Macklin	Stockwatering	1951	-	2	\$ 975.00
Doonside Dam	Wawota	Irrigation	1955	1,500	1,500	3,438.00
Dry Lake	Forward	Stockwatering	1949	-	600	9,729.00
Dunn & Watt	Mankota	Irrigation	1937	305	-	2,996.00
Dunning	Radville	Irrigation	1951	120	200	3,566.00
Dummer	Milestone	Irrigation & Dam	1949	500	200	4,742.00
Eagle Hill Creek	Plenty	Stockwatering	1946	-	10,700	6,432.00
Eagle Lake	Coleville	Irrigation & Dam	1949	2,000	3,000	5,998.00
East Borden	Borden	Stockwatering	1950	-	60	526.00
East Manitou	Nielburg	Dugout	1953	-	1.5	789.00
Eastend	Eastend	Irrigation	1939	4,000	1,300	161,682.00
Eastview	Eastview	Stockwatering	1949	-	200	5,970.00
Eatonia	Etonia	Stockwatering	1949	-	12	1,199.00
Echo Lake	Qu'Appelle Valley	Irrigation	1943	x	-	41,753.00
Egg Lake	Avonhurst	Multi-purpose Reservoir	Incomplete	800	-	3,925.00
Elfros	Elfros	Stockwatering	1949	-	25	7,330.00
Elrose	Elrose	Stockwatering	1950	-	5	999.00
Eston	Eston	Stockwatering	1954	-	10	11,469.00
Fahlman's Creek Project	Balgonie	Stockwatering	1949	-	400	15,599.00
Fairhill	Qu'Appelle Valley	Irr. & Water Control	1941	x	-	4,302.00
Fielding	Maymont	Stockwatering	1950	-	50	918.00
Fife Lake Restoration	Constance	Irrigation & Dam	1954	1,200	-	9,596.00
Fife Lake #2	Constance	Irrigation & Dam	1954	650	-	6,348.00
Fillmore Reclamation Project	Fillmore	Irrigation	Incomplete	1,600	-	656.00
Fleming	Moosomin	Stockwatering	1950	-	75	3,282.00
Foam Lake	Foam Lake	Irrigation	Incomplete	4,000	-	10,161.00
Francis Lake	Morse	Irrigation	Incomplete	1,560	-	17,305.00
Frenchman Flats	Dundurn	Irrigation	1949	1,800	2,800	9,996.00
Frenchville	Frenchville	Irrigation & Dam	1947	430	670	8,096.00
Gibson Flats	Pennant	Irrigation	1953	1,200	-	14,177.00
Girvin	Girvin	Stockwatering	1937	-	19	2,180.00
Glasnevin	Glasnevin	Dugout	1953	-	1.5	554.00
Glenside	Glenside	Stockwatering	1948	-	150	3,286.00
Gooseberry Lake	Corning	Stockwatering	1948	-	2,500	8,783.00
Gordon Grazing	Chauvin	Dugout	1953	-	1.5	830.00
Gouverneur Dam	Ponteix	Irrigation	1952	6,000	10,000	242,468.00
Gravelbourg South	Gravelbourg	Irrigation	1948	600	1,500	8,186.00
Gravelbourg Storage	Gravelbourg	Irrigation	1947	500	-	1,917.00

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
Hague Dugout	Hague	Stockwatering	1950	-	2	\$ 1,000.00
Hodgeville	Hodgeville	Stockwatering	1949	-	5	2,748.00
Hanley	Hanley	Stockwatering	1946	-	60	3,797.00
Harris Reservoir	Maple Creek	Irrigation	1956	1,000	5,000	238,074.00
Hugonard Coulee Dam	Lebret	Multi-purpose Reservoir	1956	100	400	64,231.00
Jackfish Creek	Meota	Stockwatering	1943	-	90	2,940.00
Jubilee	Indian Head	Multi-purpose Reservoir	1956	-	1.5	979.00
Jumping Deer Creek	Lipton	Stockwatering	1947	-	145	6,092.00
Kaposvar	Stockholm	Stockwatering	1947	-	290	11,946.00
Kaposvar Creek	Melville	Stockwatering	1954	-	1,400	102,747.00
Kelfield	Kelfield	Stockwatering	1947	-	25	4,927.00
Kerrobart	Kerrobart	Multi-purpose Reservoir	Incomplete	-	40	1,434.00
Kincaid	Kincaid	Stockwatering	1956	-	10	13,395.00
Kindersley	Kindersley	Stockwatering	1949	-	300	2,007.00
Kisbey Flats	Kisbey	Irrigation	1939	2,300	5,000	23,211.00
Koch - Froh	Qu'Appelle	Multi-purpose Reservoir	1956	160	-	2,390.00
Lac Pelletier	Lac Pelletier	Stockwatering	1937	-	3,350	2,139.00
Lacadena	Lacadena	Irrigation	1954	-	-	9,678.00
Laird, R. M. of	Waldheim	Dugout	1953	-	1.5	999.00
Lafleche	Lafleche	Stockwatering	1940	-	38	2,524.00
Lafleche Dam	Lafleche	Irrigation	Incomplete	15,000	30,120	415,082.00
Lajord	Lajord	Flood Control	1936	-	300	13,800.00
Lake of the Rivers	Assiniboia	Stockwatering	1938	-	300	10,805.00
Lancer Water Users	Lancer	Irrigation	1953	1,265	-	35,000.00
Langenburg	Langenburg	Irrigation & Dam	1949	800	200	11,752.00
Langenburg	Langenburg	Irrigation	Incomplete	-	2.5	3,000.00
Last Mountain Lake	Qu'Appelle Valley	Irrigation & Water Control	1941	x	-	42,721.00
Lebret	Qu'Appelle Valley	Irrigation & Water Control	1941	x	-	16,307.00
Leroy, R. M. of	Leroy	Stockwatering	1956	-	1.5	994.00
Linacre Grazing Co-op.	Fox Valley	Dugout	1955	-	1.5	644.00
Lodge Lake	Evesham	Dugout	1955	-	1.5	939.00
Little Manitou	Senlac	Dugout	1953	-	1.5	862.00
Little Manitou Lake	Watrous	Diversión Canal	Incomplete	-	-	20,182.00
Lonesome Lake	Vidora	Irrigation	1949	900	800	2,771.00
Long Creek #1	Estevan	Stockwatering	1938	-	137	8,729.00
Long Creek #2	Estevan	Stockwatering	1938	-	90	8,701.00
Loon Creek	Markinch	Stockwatering	1945	-	700	7,180.00
Lucky Lake	Lucky Lake	Stockwatering	1946	-	120	7,596.00

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
Meadowland	Macklin	Irrigation	1954	500	-	\$ 6,370.00
Manitou Cattle Breeders Co-op. Chauvin	Macklin	Dugout	1955	-	1.5	935.00
Macklin Storage	Macklin	Stockwatering	Incomplete	-	40	967.00
Mankota Dam	Mankota	Stockwatering	1950	-	10	950.00
Masefield Water Users	Masefield	Stockwatering	Incomplete	500	250	809.00
Montague Lake	Assiniboia	Irrigation	Incomplete	235	-	1,000.00
Maple Creek	Maple Creek	Irrigation & Dam	1938	10,000	23,260	356,179.00
March Flood Irrigation	Cedoux	Irrigation	1948	400	-	1,765.00
Matador	Matador	Irrigation & Dam	1946	120	220	5,216.00
Masefield	Masefield	Stockwatering	1938	-	40	3,187.00
Maxim Lake	Maxim	Stockwatering	1949	-	5,000	20,472.00
McCraney, R.M. of	Kenaston	Stockwatering	1937	-	350	1,896.00
McDonald Creek	McCord	Irrigation & Dam	1950	400	90	4,992.00
MacIntosh Slough	Golden Prairie	Irrigation	1949	500	1,500	1,990.00
Meeting Lake	Redfield	Stockwatering	1949	-	100	2,683.00
Melaval	Melaval	Stockwatering	1950	-	18	1,200.00
Mennon	Waldheim	Stockwatering	1949	-	2	976.00
Meota, R.M. of	Meota	Dugout	1953	-	1.5	1,000.00
Middle Creek	Battle Creek	Irrigation	1937	1,000	20,000	18,663.00
Mine Coulee	Neptune	Stockwatering	1948	-	40	4,377.00
Moose Jaw Creek	Lang	Irrigation	1938	2,250	2,180	7,618.00
Moose Mountain	Corning	Irrigation	1937	-	8,000	14,829.00
Moosomin Dam	Moosomin	Storage	1954	-	9,000	390,670.00
Monet	Hughton	Stockwatering	1949	-	10	878.00
Mossbank	Mossbank	Stockwatering	1949	-	2	875.00
Muenster	Muenster	Irrigation	1949	25	11	2,754.00
Newburn Lake	Invermay	Irrigation & Dam	1952	50	1,280	6,477.00
North Battleford, City of	North Battleford	Dugout	1953	-	1.5	970.00
North End Grazing	Macklin	Dugout	1954	-	1.5	728.00
North Herbert Extension	Herbert	Irrigation	Incomplete	-	-	511,909.00
North Qu'Appelle	Fort Qu'Appelle	Stockwatering	1948	-	100	2,386.00
Oxbow	Oxbow	Irrigation & Dam	1941	3,900	3,200	17,436.00
Pasqua	Moose Jaw	Stockwatering	1948	-	40	3,777.00
Pleasant Creek	Lemberg	Storage	1954	-	500	114,464.00
Pike Lake	Vanscoy	Irrigation & Dam	1948	900	2,500	7,360.00
Pipestone Lake	Broadview	Stockwatering	1938	-	1,600	11,785.00
Plenty, Village of	Plenty	Dugout	1955	-	1.5	893.00

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
Poplar River	Coronach	Irrigation & Dam	1950	300	900	\$14,838.00
Prairiedale	Superb	Stockwatering	1949	-	2	987.00
Prospect Grazing Co-op.	Linacre	Stockwatering	1956	-	1.5	820.00
Radville	Radville	Stockwatering	1947	-	32	5,019.00
Readlyn	Readlyn	Stockwatering	1950	-	3	800.00
Reciprocity	Glen Bain	Irrigation & Dam	1949	2,000	1,750	27,410.00
Reford	Wilkie	Stockwatering	1951	-	160	1,814.00
Reward	Reward	Stockwatering	1951	-	-	921.00
Richman Irrigation	Glen Bain	Irrigation	1949	-	1,000	4,607.00
Richardson - McKinnon	Consul	Irrigation	1946	3,000	-	53,913.00
Rock Glen Grazing	Rock Glen	Irrigation & Dam	1955	600	300	13,455.00
Rosedale	Hanley	Irrigation	1948	60	100	1,016.00
Rosemount Co-op.	Landis	Dugout	1953	-	1.5	903.00
Round Hill Water Users	North Battleford	Irrigation & Dam	1950	425	50	4,791.00
Rough Bark Creek	Goodwater	Stockwatering	1937	-	1,500	9,314.00
Russell Creek	Pambrun	Irrigation	1951	1,000	2,000	66,493.00
Salvador	Reward	Stockwatering	1951	-	5	1,000.00
Saskatoon	Saskatoon	Storage	1940	-	1,200	290,446.00
Sauder	Rush Lake	Storage & Irrigation	1949	-	800	29,115.00
Scotsguard	Scotsguard	Irrigation & Dam	1949	2,000	3,000	1,962.00
Shaheen	Rush Lake	Storage & Irrigation	1949	-	300	9,028.00
Sherwood	Regina	Dugout	1948	20	3	697.00
Shrimp Lake	Herschel	Stockwatering	1947	-	450	9,367.00
Sioux Reserve	Fort Qu'Appelle	Stockwatering	1949	-	75	8,605.00
Smiley, Village of	Smiley	Dugout	1949	-	1.5	1,000.00
Smiley	Smiley	Irrigation & Dam	1951	600	300	9,998.00
Snake Bite	Beechy	Irrigation	1954	665	-	9,999.00
Snipe Lake	Eston	Stockwatering	1949	-	-	3,415.00
Snowdown	Fox Valley	Dugout	1954	-	1.5	898.00
Souris - Estevan	Estevan	Irrigation & Dam	1941	-	-	91,133.00
Souris River	Weyburn	Flood Control	1948	-	-	11,998.00
South Abernethy Project	Abernethy	Irrigation	Incomplete	320	-	14,568.00
Southey, Village of	Southey	Multi-purpose Reservoir	1956	-	2	997.00
Stelcam Community Dam	Stelcam	Stockwatering	Incomplete	-	360	9,791.00
Stephens Dam	Abernethy	Stockwatering	1948	-	12	8,716.00
Spangler Project	Govenlock	Irrigation	1948	1,500	2,100	4,950.00
Summerberry	Summerberry	Multi-purpose Res.	Incomplete	427	-	6,824.00
Summercove	Mankota	Irrigation & Dam	1949	1,200	1,500	23,837.00

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acres Feet	Costs
Sunbeam Creek	Indian Head	Multi-purpose Res.	Incomplete	100	300	\$ 3,937.00
Sunny South	Indian Head	Multi-purpose Res.	1956	-	1.5	990.00
Stewart Valley Dugout	Stewart Valley	Stockwatering	1950	-	3	799.00
Sturgis Community Dam	Sturgis	Stockwatering	1950	-	60	20,961.00
Summit Creek	Bridgeford	Irrigation & Dam	1949	800	3,000	13,227.00
Swan Hill Grazing Co-op.	Donavon	Dugout	1955	-	1.5	709.00
Swanson Co-op. Pasture	Donavon	Stockwatering	1956	-	1.5	770.00
Swift Current	Swift Current	Irrigation & Dam	1946	30,000	95,000	816,472.00
Talmage	Cedoux	Irrigation	1948	1,600	-	3,483.00
Tantallon	Tantallon	Stockwatering	1942	-	-	2,790.00
Tatague Lake	Weyburn	Flood Irrigation	Incomplete	10,000	-	9,966.00
Terrell, R.M. of	Spring Valley	Stockwatering	1952	-	10	2,491.00
Thunder Creek	Kettlehut	Flood Irrigation	1948	-	-	27,204.00
Thunder Creek Channel	Moose Jaw	Irrigation & Dam	1951	300	7,000	10,007.00
Tribune Dam	Tribune	Stockwatering	1950	-	300	6,499.00
Truax	Truax	Stockwatering	1949	-	250	11,899.00
Twelve Mile Lake	Maxstone	Flood Irrigation	1956	-	-	7,998.00
Tyvan	Tyvan	Stockwatering	1947	-	1,000	11,986.00
Val Marie	Val Marie	Irrigation	1937	5,920	7,000	214,558.00
Val Marie West	Val Marie	Irrigation	1940	4,230	2,000	150,639.00
Valley Park Irrigation	Valley Lake	Irrigation	1949	1,200	-	8,133.00
Vera Grazing	Vera	Dugout	1953	-	1.5	891.00
Vera Winter Grazing	Vera	Dugout	1954	-	1.5	939.00
Viceroy	Viceroy	Stockwatering	1950	-	3	798.00
West Poplar #1	Killdeer	Irrigation	Incomplete	750	1,000	4,460.00
West Osage	Cedoux	Irrigation & Dam	1949	300	600	4,905.00
Weyburn	Weyburn	Flood Irrigation	1940	-	4,000	51,311.00
Wheatlands, R.M. of	Parkbeg	Irrigation & Dam	1951	100	60	3,452.00
Wilson Lake	Lizard Lake	Multi-purpose Res.	Incomplete	400	-	2,813.00
Wittrock	Frenchville	Irrigation	1947	520	-	3,884.00
Wolseley	Wolseley	Stockwatering	1948	-	20	1,800.00
Wolverine Creek	Humboldt	Stockwatering	1945	-	522	52,600.00
Wood Mountain	Willow Bunch	Irrigation & Dam	1951	40	60	6,337.00
Woodrow - Pinto Creek	Woodrow	Irrigation	1949	1,000	1,400	41,982.00
Wood River Development	Coderre and	Stockwatering	1942	-	4,923	33,738.00
Wynn Community Project	Gravelbourg	Multi-purpose Res.	Incomplete	500	-	2,276.00
Wynyard	Wolseley	Stockwatering	1947	-	35	6,225.00

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
Yonker Grazing Co-op. Young	Chauvin Young	Dugout Stockwatering	1955 1948	- -	1.5 250	\$ 807.00 8,892.00
(x) - Ultimate irrigation development for all projects along Qu'Appelle River Valley 30,000 - (total storage capacity - 95,600 acre feet).						
<u>ALBERTA</u>						
Acadia Valley	Acadia Valley	Dugout	1953	-	1.5	2,252.00
Acadia Valley #2	Acadia Valley	Dugout	1954	-	1.5	1,000.00
Aetna Irrigation District	Aetna	Irrigation	1947	8,000	-	82,004.00
Ambrose Flats	Irvine	Irrigation	1951	800	1,000	4,781.00
Anatole	Hanna	Stockwatering	1953	-	7	2,990.00
Argyle, M.D. of	Staveley	Stockwatering	1949	-	80	10,912.00
Atlee Gas Well #1	Atlee	Irrigation (pump)	1939	7,000	-	12,423.00
Atlee Gas Well #2	Atlee	Irrigation (pump)	1939	-	-	14,300.00
Badger Lake	Lomond	Stockwatering	1948	-	10	2,990.00
Balzac	Balzac	Irrigation	1956	900	-	8,141.00
Bare Creek	Comrey	Irrigation & Dam	1950	-	500	11,600.00
Bare Creek #2	Comrey	Multi-purpose Dam	1956	1,000	1,100	13,029.00
Bartman Dam	Cessford	Irrigation & Dam	1943	1,000	3,000	49,100.00
Beaver Creek Stock Assoc.	Fort MacLeod	Dugout	1955	-	-	981.00
Beaver Dam Creek Reservoir	Castor	Stockwatering	1950	-	300	17,996.00
Bedford Slough	Medicine Hat	Irrigation	Incomplete	3,000	200	35,493.00
Bell Lake	Pollockville	Irrigation	1949	700	1,500	4,738.00
Berry Creek	Carolside	Irrigation	1948	10,000	30,000	158,884.00
Bluefield Grazing Assoc.	Thelma	Stockwatering	1956	-	30	3,500.00
Bowell	Bowell	Dugout	1954	-	1.5	1,000.00
Bowell West Grazing Assoc.	Bowell	Dugout	1955	-	1.5	744.00
Bow Island 40 Mile Grazing	Bow Island	Dugout	1954	-	1.5	782.00
Bowmanton	Bowmanton	Stockwatering	1953	-	500	14,860.00
Brunswick Coulee	Enchant	Irrigation	1949	500	205	4,631.00
B.T. Grazing Co-op.	Hilda	Stockwatering	1956	-	1.5	1,000.00
Bull Pound Creek	Hanna	Stockwatering	1939	-	2,000	-
Bullshead Creek	Medicine Hat	Irrigation & Dam	1940	800	1,130	8,170.00
Cameron	Youngstown	Multi-purpose Dam	Incomplete	662	1,000	2,236.00
# Canada Land & Irrig. Project	Medicine Hat	Irrigation	1936	45,000	-	80,000.00

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
C. Y. Water Users	Taber	Stockwatering	1949	-	310	\$16,477.00
Champion	Champion	Irrigation	1954	2,500	-	4,984.00
Clear Lake	High River	Stockwatering	1948	-	10,000	35,000.00
Collins	Sheerness	Stockwatering Reservoir	1956	-	40	3,495.00
Commodore	Vulcan	Irrigation	1954	400	-	3,990.00
Comrey Grazing	Comrey	Dugout	1953	-	1.5	1,000.00
Comrey #2	Comrey	Dugout	1954	-	1.5	980.00
Conrich	West Calgary	Irrigation	1954	1,600	-	6,240.00
Consort	Hanna	Stockwatering	1955	-	20	9,651.00
Cowley Community	Cowley	Irrigation	1952	750	-	4,666.00
Cressday	Medicine Hat	Stockwatering	1954	-	-	13,541.00
Cutbank Coulee	Cressday	Stockwatering Reservoir	Incomplete	350	500	2,337.00
Dead Fish Creek	Cessford	Irrigation	1949	4,000	5,000	47,832.00
Del Bonita	Twin River	Stockwatering	1955	-	250	9,196.00
Delia	Morrin	Stockwatering	Incomplete	-	165	3,914.00
Drowning Ford	Vale	2 Dugouts & Dam	1953	-	100	4,368.00
East Berry Creek	Roselynn	Irrigation	1949	1,500	750	9,677.00
Eastern Irrigation District	Brooks	Irrigation	1937	2,280	22,000	22,490.00
Esler	Hanna	Stockwatering	1954	-	17	2,808.00
Esther Flood Irrigation	Macklin	Irrigation	1952	4,000	5,000	4,592.00
Eureka Irrigation Project	Grassy Lake	Irrigation	1949	12,000	1,000	38,568.00
Fertility Grazing Assoc.	Hanna	Stockwatering	1956	-	1.5	998.00
Fish Lake	Pincher Creek	Irrigation & Dam	1954	1,000	-	6,895.00
Franklin Coulee	Retlaw	Stockwatering	1948	-	1,500	20,125.00
Garden Plains	Hanna	Stockwatering	1956	-	1.5	999.00
Graham Creek	Calgary	Stockwatering	1943	-	230	8,529.00
Grainger	Three Hills	Multi-purpose Reservoir	1956	30	117	9,482.00
Greasewood Coulee	Manyberries	Irrigation & Dam	1954	500	650	9,798.00
Hanna	Hanna	Stockwatering	1948	-	500	29,498.00
Hilda Community Project	Hilda	Multi-purpose Res.	Incomplete	-	10	5,035.00
Illingsworth	Bow Island	Dugout	1954	-	1.5	1,000.00
Indian Farm Creek	Pincher Creek	Irrigation & Dam	1953	600	500	4,795.00
Indus Community Project	Conrich	Irrigation	1955	1,220	-	9,843.00
Irvine	Irvine	Irrigation & Dam	1950	70	100	4,799.00
Jaydot	Elkwater	Multi-purpose Res.	1956	300	400	8,988.00

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
Kathryn	Calgary	Irrigation & Dam	1954	300	-	\$ 9,184.00
Lake Beauvais	Pincher Creek	Irrigation	1950	2,000	2,400	15,996.00
# Leavitt Irrigation	Mountain View	Irrigation	1939	7,000	7,050	65,578.00
Lewis	Vulcan	Irrigation & Dam	1953	350	-	4,345.00
Loveland	Hanna	Irrigation	1954	3,000	-	17,655.00
Loyalist Creek	Hanna	Irrigation	1950	2,000	1,400	14,993.00
Lundbreck	Pincher Creek	Stockwatering	1953	-	100	4,689.00
McAlpine Reservoir	Walsh	Irrigation	1951	600	1,000	15,917.00
McGregor Dam	Vulcan	Irrigation	1951	1,500	700	9,473.00
Mackay Dam	Walsh	Irrigation	1952	600	300	9,600.00
# Magrath	Magrath	Irrigation	1939	4,000	-	2,756.00
Meadow Creek Dam	Claresholm	Irrigation	1952	1,500	-	5,630.00
Milne Community Project	Conrich	Irrigation	1955	1,300	-	9,644.00
Morley	Morley	Stockwatering	1956	-	1.5	980.00
Mountain View	Mountain View	Storage	1936	-	4,200	3,000.00
Naismith	Youngstown	Multi-purpose Reservoir	1956	300	145	9,421.00
Nemiscam	Etzikom	Dugout	1954	-	1.5	1,000.00
Nester	Pollockville	Multi-purpose Reservoir	Incomplete	300	1,350	1,480.00
Nobleford Water Users	Nobleford	2 dugouts	1953	-	3	11,173.00
North Fincastle	Taber	Irrigation & Dam	1948	2,000	4,000	17,943.00
Pancost - Olson Water Users	Bowell	Dugout	1955	-	1.5	999.00
Parfles	Chancellor	Irrigation	1954	250	-	4,730.00
Pershing Dam	Glenwood	Irrigation	1951	100	200	4,782.00
Peace Butte Reservoir	Peace Butte	Stockwatering	1955	450	550	8,993.00
Petiski Grazing Assoc.	Nanton	Stockwatering	1955	-	1.5	990.00
Pirmez Creek	Pirmez Creek	Irrigation	1951	6,000	500	20,998.00
Pothole Coulee	Magrath	Irrigation	1948	Part of St. Mary Project		
Priddis	High River	Stockwatering	1955	-	312	8,802.00
Provost, Village of	Provost	Multi-purpose Dam	1956	-	3	4,812.00
Ranchville Community Res.	Ranchville	Irrigation	Incomplete	300	-	3,137.00
# Raymond	Raymond	Irrigation	1943	3,000	1,600	6,000.00
Reid Hill	Vulcan	Irrigation	1952	1,000	700	8,866.00
Rock Lake Project	Brooks	Storage	Incomplete	11,000	-	46,516.00
# Rolling Hills	Rolling Hills	Irrigation	1938	25,000	-	46,839.00
Roseglan Water Users	Schuler	Multi-purpose Dam	Incomplete	200	150	1,513.00
Ross Creek	Irvine	Irrigation	1950	3,000	5,000	47,998.00

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
Ross Lake Community Rough Meadow Reservoir Ruks	Raymond Coronation Pincher Creek	Stockwatering Irrigation Irrigation & Dam	1950 Incomplete 1954	- 200 900	300 - 250	\$ 7,987.00 2,471.00 6,484.00
Schuler Water Users Serviceberry Creek Seven Persons Severn Creek Sheerness Grazing (Blois) Sheerness #2 Snake Creek Spondin Starland, M. D. of Stehr Coulee Sounding Creek South Macleod Squaw Coulee	Schuler near Drumheller Seven Persons Rosebud Roselynn Roselynn Calgary Hanna Morrin Walsh Cereal Macleod High River	Multi-purpose Res. Irrigation Stockwatering Irrigation & Dam Stockwatering Stockwatering Irrigation & Dam Dugout Stockwatering Multi-purpose Res. Irrigation Irrigation Irrigation	Incomplete 1949 1943 1950 1953 1954 1950 1955 Incomplete 1956 1949 1948 1949	1,500 1,200 - 1,000 - - 500 - - - 8,000 6,000 2,000	5 500 800 1,000 12 50 300 1.5 45 26 5,600 - 455	4,385.00 17,518.00 12,103.00 24,990.00 3,797.00 2,190.00 15,976.00 1,000.00 3,196.00 4,570.00 51,988.00 82,614.00 17,999.00
Three Hills Twin Lakes Twin River Grazing	Three Hills Chancellor Twin River	Stockwatering Irrigation Stockwatering	1948 1954 1953	- 500 -	120 - 125	19,652.00 12,498.00 4,486.00
Vulcan Dam Vauxhall	Vulcan Vauxhall	Irrigation Stockwatering	1951 1948	400 -	150 30	3,997.00 5,883.00
Walsh Flats Wheatacre Dam Wild Horse Storage Wheatacre #2 Wintering Hills Wisdom Water Users Woolford Community Project	Walsh Rockyford Cressday Rockyford Hussar Wisdom Cardston	Irrigation Irrigation Irrigation Irrigation Irrigation Multi-purpose Dam Irrigation	1953 1950 1936 1952 1950 Incomplete 1955	2,100 1,600 3,600 - 1,000 420 400	25,000 1,500 4,500 - 500 500 -	4,700.00 12,976.00 24,370.00 4,744.00 9,993.00 10,808.00 3,593.00
Yeast Reservoir	Thelma	Irrigation	1953	400	800	6,592.00

- P. F. R. A. gave assistance to a project already in existence to improve storage capacities, canals and distribution systems.

APPENDIX VI

MAJOR PROJECTS - IRRIGATION RECLAMATION

(Projects by Special Votes of Parliament, Administered by P.F.R.A.)
to March 31, 1957

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
<u>MANITOBA</u>						
Assiniboine River Diking & Cut off	Brandon	River Control	Incomplete	-	-	\$ 712,588.00
North-West Escarpment Reclamation Proj. - Riding Mtn. Area	Dauphin	Watershed Control	Incomplete	-	-	787,826.00
Saskatchewan River Reclam- ation - Pasquia Area	The Pas	Reclamation	Incomplete	135,000	-	1,737,158.00
<u>ALBERTA</u>						
Bow River	Medicine Hat	Irrigation	Incomplete	235,000	408,862	54,398.00
(a) Purchase of Canada Land & Irrigation Company						2,353,182.00
(b) Development & Construction						18,409,002.00
St. Mary	Lethbridge	Irrigation	Incomplete	510,000	320,000	11,808,811.00
Belly River Diversion	Lethbridge	Irrigation	1950	-	-	53,901.00
<u>BRITISH COLUMBIA</u>						
Cawston Benches	Keremeos	Irrigation (pump)	1951	629	2,000	185,491.00
Chase & Johnston - Western Canada Ranching	Kamloops	Irrigation	1951	755	-	98,243.00
Western Canada Ranching #2	Kamloops	Irrigation (pump)	1950	54	-	58,069.00
Lillooet - Pemberton	Pemberton	River Control	1953	-	-	1,056,539.00
South Thompson - Niskonlith						
Gravity Project	Kamloops	Irrigation	Incomplete	1,030	1,200	12,282.00
Westbank Project	Kelowna	Irrigation	1950	1,200	2,500	537,450.00
Bankhead Irrigation Project	Kelowna	Irrigation	1951	92	-	32,229.00
Penticton West Bench	Penticton	Irrigation (pump)	1953	800	-	66,362.00

(Above includes ONLY Construction Costs)

APPENDIX VII

PRAIRIE FARM REHABILITATION ACT - EXPENDITURE BY ACTIVITIES

April 1, 1935 - March 31, 1957

	1935 - 1956	1956 - 1957	Total
ADMINISTRATION			
Ottawa Administration		31,261	305,714
Regina Administration	274,453	139,860	1,335,092
	1,195,232	171,121	1,640,806
	1,469,685		
EQUIPMENT			
Purchase of Equipment	1,121,798	168,958	1,290,756
Upkeep of Equipment	747,240	132,874	880,114
Equipment Depot	1,604,943	299,565	1,904,508
	3,473,981	601,397	4,075,378
LAND UTILIZATION			
Supervision	592,712	44,415	637,127
Construction of Community Pastures	6,140,063	565,147	6,705,210
Pasture Improvements	175,881	180,262	356,143
Operation of Community Pastures	3,821,257	551,559	4,372,816
Purchase of Bulls	544,465	50,640	595,105
Re-establishment of Farmers	---	---	---
Grass Seeding & Experimental Regrassing	645,865	34,661	680,526
	11,920,243	1,426,684	13,346,927
WATER DEVELOPMENT			
Supervision	763,930	21,676	785,606
Small Projects including Engineering	14,771,809	883,309	15,655,118
Large Irrigation and Storage Projects			
Supervision	1,721,267	65,019	1,786,286
Construction and Improvements	7,428,049	638,387	8,066,436
Maintenance and Operation	5,499,889	348,407	5,848,296
Re-establishment of Farmers	199,083	1,821	200,904
Surveys and Explorations	1,660,484	---	1,660,484
Purchase of Land	727,003	10,547	737,550
	32,771,514	1,969,167	34,740,681
Cultural work for soil drifting control and related problems prior to April 1, 1946 (under administration of Experimental Farms Service).			
	4,966,394	---	4,966,394
GRAND TOTAL	54,601,817	4,168,369	58,770,186

SPECIAL VOTES UNDER P. F. R. A. ADMINISTRATION

	1935 - 1956	1956 - 1957	Total
Assiniboine River, Surveys and Construction	484, 449	294, 744	779, 193
Lillooet Project B.C. Construction & Exploration	1, 170, 133	---	1, 170, 133
Land Reclamation & Development in B.C.	1, 889, 589	50, 460	1, 940, 049
St. Mary's Irrigation Project - Alberta	14, 862, 211	2, 855, 364	17, 717, 575
Bow River Project - Alberta	22, 477, 629	1, 496, 787	23, 974, 416
Red Deer River Project - Alberta	845, 284	54, 692	899, 976
Other Miscellaneous Projects - Construction	210, 392	---	210, 392
Land Protection & Reclamation - Manitoba	2, 124, 736	400, 756	2, 525, 492
South Saskatchewan River Project - Saskatchewan	3, 878, 476	219, 374	4, 097, 850
Buffalo Pound Project - Saskatchewan	615, 001	600, 784	1, 215, 785
Surveys and Engineering Costs	7, 068, 582	1, 682, 964	8, 751, 546
GRAND TOTAL	55, 626, 482	7, 655, 925	63, 282, 407

- (a) Included in Cultural Administration to March 31, 1938.
- (b) Included in Water Development Administration to March 31, 1938.
- (c) Includes \$388, 923.57 expended under the Supplementary Public Works Construction Act, 1935.
- (d) Includes \$95, 198.65 expended on St. Mary River Project (administration) in 1946-47.
- (e) Includes \$300, 879.29 expended on St. Mary River Project (construction) in 1946-47.
- (f) Includes \$147, 530.22 expended on St. Mary Project (administration) in 1947-48.
- (g) The amounts shown include Red Deer \$325, 642 and South Saskatchewan \$370, 093 provided by Department of Reconstruction. In addition, the following amounts were paid from P. F. R. A. Vote: South Saskatchewan - \$59, 568; Red Deer - \$33, 207.
- (h) General Survey charges now being paid from other P. F. R. A. Votes.
- (i) Amounts shown in notes (d), (e) and (f) to be added to this total.
- (j) Veteran's Land Act expenditure not included.
- (k) Expenditures until 1949-50 included under Land Utilization and Water Development.
- (l) Previously under P. F. R. A. Vote (see item (g)).
- (m) Re-establishment of Farmers now under Water Development.
- (n) Previously under Land Utilization (see item (m)).

EXPENDITURES BY PROVINCES
PRAIRIE FARM REHABILITATION ACT and SPECIAL VOTES UNDER ITS ADMINISTRATION
April 1, 1935 - March 31, 1957

	<u>Manitoba</u>	<u>Saskatchewan</u>	<u>Alberta</u>	<u>British Columbia</u>
P.F.R.A.				
Major Irrigation and Reclamation in the Prairie Provinces				
Land Reclamation, Construction and Development in B.C.	24,951	5,409,337	42,500,398	3,109,726
Land Protection and Reclamation Diking and Cut off (Assiniboine, Manitoba)	2,525,492			
Surveys and Engineering Costs Administration	779,193 1,221,802 272,333	4,330,661 1,864,552	3,249,994 1,710,171	130,855 132,325
	<u>9,379,186</u>	<u>54,829,964</u>	<u>54,470,537</u>	<u>3,372,906</u>
				<u>122,052,593</u>

REVENUE
REVENUE RECEIVED FROM PROJECTS UNDER P.F.R.A. OFFICE
to March 31, 1957

Pasture Operation and General Revenue	4,699,245
Irrigation Project Operation (Under P.F.R.A. Vote)	545,310
Irrigation & General Revenue (Major Projects Vote)	<u>1,475,142</u>
TOTAL	<u>6,719,697</u>

APPENDIX VIII
TOTAL IRRIGATION DEVELOPMENT - ALBERTA and SASKATCHEWAN

Project	Year Started	Irrigable Acreage		Major Reservoirs	(Live Storage (Acre Feet))	
		Present	Ultimate		Present	Ultimate
<u>Mountain & Foothill Region</u>						
United Irrigation Dist.	1921	21,000	34,000			
Mountain View Irrigation Dist.	1925	3,600	3,600	Driggs Lake	7,500	7,500
Leavitt-Aetna Irr. Dist.	1943	3,600	11,700	Driggs Lake		
MacLeod Irr. Dist.	1948	2,500	10,000			
Other		12,300	32,700			
Total		43,000	92,000			
<u>Western Prairie Region</u>						
St. Mary-Milk River Project	1901	260,000	510,000	St. Mary Reservoir	270,000	270,000
				Chin	50,000	150,000
				Jensen	14,000	14,000
				Ridge	-	80,000
				Verdigris	-	110,000
				Waterton	-	130,000
Bow River Irr. Project	1918	100,000	240,000	Lake McGregor	75,000	250,000
				Travers	100,000	100,000
				Little Bow	12,000	12,000
Western Irr. District	1908	50,000	50,000	Chestermere	3,000	3,000
Eastern Irr. District	1914	200,000	280,000	Lake Newell	90,000	100,000
				Crawling Valley	-	120,000
Lethbridge Northern Irr. Dist.	1922	75,000	96,000	Keho	40,000	40,000
Berry Creek Project	1938	3,000	8,000	Berry Creek Reservoir	30,000	30,000
Red Deer Irr. Project	--	-	300,000	Ardley Reservoir	-	300,000
				Buffalo Lake	-	300,000
				Craig & Hamilton	-	250,000
Other		52,000	201,000			
Total		740,000	1,685,000			
<u>Central Prairie Region</u>						
French Flats-Valley Park	1949	700	6,000	South Sask. Reservoir	-	3,100,000
South Sask. Irr. Project	--	-	470,000	Delisle Reservoir	-	25,000
				Blackstrap Reservoir	-	25,000
Red Deer Extension		-	200,000	Loverna Reservoir	-	250,000
Other		13,300	14,000			
Total		14,000	690,000			

Project	Year Started	Irrigable Acreage		Major Reservoirs	(Live Storage (Acre Feet))	
		Present	Ultimate Proposals		Present	Ultimate
Cypress Hills Region						
Eastend-Val Marie Irr. Proj.	1937	10,000	13,000	Cypress Lake Eastend Val Marie Reservoirs Fifty Mile Reservoir	100,000 2,000 12,000 -	100,000 2,000 12,000 80,000
Consul-Vidora Irr. Projects	1945	7,000	10,000			
Ross Creek Irr.	1949	2,000	3,000	Gros Ventre	4,500	8,000
Maple Creek Irr.	1936	5,000	5,000	Downie Lake Junction Harris	10,000 10,000 5,000	10,000 10,000 5,000
Swift Current Irr. Project	1940	12,000	21,000	Dunclairn Highfield	85,000 13,000	85,000 13,000
Ponteix Project	1953	1,000	3,000	Gouverneur	10,000	10,000
Cadillac Project	1953	700	800	Cadillac	1,500	1,500
Lafleche Project	--	-	8,000	Admiral	2,500	2,500
Other	--	67,300	98,000	Lafleche	Incomplete	30,000
Total		105,000	161,800			
Eastern Prairie Region						
Lumsden-Fairy Hill Irr.	1910	3,000	6,000	Buffalo Pound Lake	40,000	120,000
Souris-Estevan-Kisbey Irr. Pro. 1937		5,000	11,000	Dead Lake	3,000	50,000
South Saskatchewan				Moose Mountain	9,000	9,000
Extension - Qu'Appelle	--	-	24,000			
Other	--	20,000	34,000			
Total		28,000	75,000			
Total Irrigation (Alberta & Saskatchewan)						
		930,000	2,703,800			

Date Due

[illegible]

APR 13 1977

HD 1781 A2 P8222 1956/1957
CANADA PRAIRIE FARM
REHABILITATION ADMINISTRATION
PRAIRIE FARM REHABILITATION
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